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THESIS

AN ANALYSIS OF THE EFFECTS OF MULTIYEAR
PROCUREMENT ON COMPETITION AT THE
SUBCONTRACTOR LEVEL

by

Anthony M. Dovie

December 1985

Thesis Advisor:

R.W. Smith

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An Analysis Of The Effects Of Multiyear Procurement On
Competition At The Subcontractor Level

by

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Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

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December 1985

ABSTRACT

This thesis was directed at identifying the effects of multiyear procurement (MYP) on the subcontractor competitive environment. Two separate questionnaires were utilized to elicit operational procedures and subjective opinions from a sample of U.S. Navy MYP prime contractors and their vendors associated with the multiyear contract. The responses from the prime contractors were not of sufficient detail to derive any generalized statements about the effects of MYP on their subcontracting activities. The subcontractor surveys indicated a strong consensus of opinion that their current position as a subcontractor created a definite advantage for their firm at contract resolicitation. The perceived negative effects of multiyear procurement are on the subcontractors who have to wait for up to five years to recompete for that segment of business.

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I. INTRODUCTION

A. OBJECTIVES OF THE RESEARCH

The option to use multiyear procurement (MYP) procedures in the acquisition of major weapon systems was made available to the Department of Defense in 1982. Public Law 97-86 included specific wording that authorized the use of multi-year procurement for approved major weapon systems. For MYP purposes a major weapon system is defined as follows:

A major weapon system is one in which total actual and planned RDT&E exceed \$200 million or total actual and planned production expenditures exceed \$1 billion.
[Ref. 1: p. 1]

This legislation became effective shortly after Deputy Secretary of Defense, Frank C. Carlucci, drafted a memorandum establishing 32 initiatives for Department of Defense procurement reform. These 32 initiatives constituted the Acquisition Improvement Program (AIP), and were aimed at identified weaknesses in the governmental acquisition process. Two specific areas identified in the AIP were initiative No. 3 "Multiyear Procurement" and initiative No. 32 "Encouraging Competition". According to most of the literature reviewed, these two separate initiatives were often tied together because of their causal relationship. A major advertized advantage of employing multiyear procurement was it's positive effect of increasing competition.

The concept of MYP has proven to be a financial success for both the government and industry. At least that segment of the industry which was selected to be awarded a multiyear contract or as a subcontractor under a multiyear contract.

Through Fiscal Year 1985 all Navy MYP contracts for major weapon systems have been awarded on a non-competitive

basis. As such, the benefit of increased competition is implied to be derived at the subcontractor level. This study will examine a sample of the Navy's major weapon system MYP contractors to identify the effect of MYP on their subcontracting activity and on competition among their subcontractors.

B. RESEARCH QUESTIONS

The basic research question for this study is, "What effect does multiyear procurement of major weapon systems have on competition among subcontractors?"

The following subsidiary questions were formulated to further define the basic research question:

1. What is multiyear procurement and what are the legislative and regulatory constraints on its use?
2. What is competition and what are the current legislative actions concerning its application?
3. How has multiyear procurement affected the competitive industrial base at the subcontractor level?
4. Does a multiyear contract create a competitive advantage for the incumbent at contract resolicitation?

C. SCOPE AND LIMITATIONS

The study was limited to active U.S. Navy multiyear contracts for major weapon systems. It will analyze the applicability of multiyear procurement for major weapon systems with the goal of determining its influence on competition in the subcontractor base.

For the purpose of this research the following delimitation is made: This study was limited to an exploration of the subcontracting policies and practices of the prime Navy contractors of multiyear contracts. Specifically how the award of a multiyear contract has influenced or modified their subcontracting procedures and the increase or decrease in the number of firms competing for those subcontracts. Additionally a sample of subcontractors for MYP prime contractors was surveyed to ascertain their views on the influence of the multiyear contract.

D. RESEARCH METHODOLOGY

This research was conducted employing the methods of a literature search, telephone interviews, and survey questionnaires which were mailed to firms involved in a Navy MYP contract for a major weapon system. The literature search was performed to provide the researcher with a broad background of the historical concepts of multiyear procurement and competition. The telephonic interviews were conducted primarily to establish firm points of contact for the surveys and to clarify specific segments of returned survey questionnaires. The primary research was conducted via the use of survey questionnaires. Two separate sets of questionnaires were developed. The first was directed at and tailored for prime MYP contractors. A second questionnaire was directed at the subcontractors for MYP prime contractors.

E. ORGANIZATION OF THE STUDY

This research effort is organized into six chapters. Chapter I is a broad introduction presenting the overall objectives and methodology of the study. Chapter II provides a discussion on the development and use of MYP. It also addresses the identified advantages and disadvantages of employing MYP. Chapter III presents basic views on competition and current legislation emphasizing its use. Chapter IV presents the survey questionnaire directed at the prime contractors and their combined responses. Chapter V presents the survey questionnaires directed at the subcontractors and their combined responses. Chapter VI presents the conclusions and recommendations generated by this research.

II. HISTORICAL EVOLUTION OF MULTIYEAR PROCUREMENT

A. THE ANNUAL APPROPRIATION PROCESS

1. Federal Budgeting Procedures

The United States Government operates predominately under an annual budgetary cycle. This system provides the Congress with yearly review and control over the entire fiscal operations of every governmental agency. Over the past two decades Congress has tightened the purse strings of the country with the result being increased centralization of program control.

The services utilize a Five Year Defense Plan (FYDP) to forecast specific requirements for the next five years. In this planning phase, the military role of the United States is examined considering the world environment and the need for efficient management of resources. The U.S. military strategy is identified which will maintain the required national security, and the military forces necessary to accomplish those objectives are specified.

Annually the services respond to the Defense Guidance drafted by the Secretary of Defense. This guidance promulgates the fiscal, force, and resource planning guidance within economic constraints and the Secretaries management priorities.

The services tailor the FYDP to conform to the limitations imposed by the Defense Guidance. The combined budget for the Department of Defense is then submitted to the Office of Management and Budget for inclusion in the President's budget request. In January of each year the President submits his budget proposal for the next fiscal year to Congress [Ref. 2: pp. 3-5].

Congress takes the voluminous budget proposal and during the next nine months considers the merit and

desireability of the many identified elements. The Congressional process centers around two key stages which must occur before the government can spend money. The first hurdle is the authorization process.

The authorization is the substantive legislation that establishes the purpose and the guidelines for a given activity and usually sets a limit on the amount that can be spent. [Ref. 3: p. 1]

Before an agency can spend the funds authorized a second separate Congressional action must occur. This is the appropriation process.

The appropriation enables an agency or department to (1) make spending commitments and (2) spend money. [Ref. 4: p.1]

This authorization/appropriation process initiates in the appropriate committees of the respective bodies of Congress. It is during these processes that a recent trend toward micromanagement has become more evident. Controversial or politically sensitive DoD programs come under close review. The result is that the budget requests are often significantly changed during the political gaming of Congressional review.

This uncertainty associated with the annual budget cycle is a destabilizing factor for both the services and industry. Industry is unable to plan production loads beyond the current fiscal year and as a result must often buy materials and services in uneconomic quantities. This instability could also have a negative effect on a company's personnel structure and limit the incentive for capital investment.

2. Effects On Procurement

Operating within the restrictions and uncertainties of the annual budget cycle further complicates the federal acquisition process. The services try to work within the structure of their FYDP and the annual Defense Guidance of the Secretary of Defense. The resulting request for yearly allocations for a major weapon system is the culmination of a detailed analysis process.

The subsequent request for defense items is subjected to an intense review by committees from both the House and Senate. Often the number of end items approved for full funding is considerably different from what was proposed by the Department of Defense.

Department of Defense (DoD) Directive 7200.4 states the objective of full funding of DoD programs as:

The objective is to provide funds at the outset for the total estimated cost of a given item so that Congress and the public can clearly see and have a complete knowledge of the full dimensions and cost when it is first presented for an appropriation. In practice, it means that each annual appropriation request must contain the funds estimated to be required to cover the total cost to be incurred in completing delivery of a given quantity of usable end items such as aircraft, missiles, ships, vehicles, ammunition and all other items of equipment. [Ref. 5: p. 3]

As a result of the numerous deviations from the budget submissions imposed by Congressional review, the entire acquisition process suffers. There is a high level of uncertainty associated with the annual procurement of our major weapon systems. With this uncertainty naturally comes more risk for governmental contractors.

Contractors are unwilling to invest funds in capital improvements or to procure material in economic order quantities for more than the one year's order. A major reason for this is the uncertainty of future contracts to allow for recovery of their investment. As a result, annual

negotiations for our major weapon systems are separate business transactions. This process hinders effective procurement because of decreased program stability and a decrease in long-range planning capability.

B. REINTRODUCTION OF MULTIYEAR PROCUREMENT

The option to utilize multiyear procurement as an acquisition tool has long been a viable alternative to annual procurement. The primary limiting factor which excluded major weapon systems from employing this tool was the low contingent liability of \$5 million on the reimbursement of contractor expenses in the event of contract cancellation.

In early 1981 Deputy Secretary of Defense, Frank C. Carlucci, directed that an internal review of the Department of Defense's procurement program be conducted. The result of this comprehensive study was a memorandum titled "Improving the Acquisition Process". The more informal name is the "Carlucci Initiatives". This document outlined thirty-two specific actions directed at improving the Federal Acquisition Process [Ref. 6: p. 8].

Initiative number three was an enhanced version of multiyear procurement. It was an important element of the DoD Acquisition Improvement Program that was projected to yield considerable cost savings. The savings were forecasted to be in the range of ten to twenty percent over existing annual procurement procedures [Ref. 7: p.112].

This list of acquisition initiatives helped spark Congressional support for MYP. The following quote from the Fiscal Year 1982 Defense Authorization Bill marked the rebirth of MYP as a viable procurement strategy.

The Congress finds that in order to ensure national defense preparedness, to conserve fiscal resources, and to enhance defense production capability, it is in the interest of the United States to acquire property and services for the Department of Defense in the most timely, economic and efficient manner. It is therefore the policy of the Congress that services and property (including weapon systems and associated items) for the

Department of Defense be acquired by any kind of contract, other than cost-plus-percentage-of-cost contracts, but including multiyear contracts, that will promote the interests of the United States. Further, it is the policy of the Congress that such contracts, when practicable, provide for the purchase of property at items and in quantities that will result in reduced costs to the Government and provide incentives to contractors to improve productivity through investment in capital facilities, equipment, and advanced technology.

It is also the policy of the Congress that contracts for advanced procurement of components, parts and materials necessary for manufacture or for logistics support of a weapon system should, if feasible and practicable, be entered into in a manner to achieve economic-lot purchases and more efficient production rates. [Ref. 8]

C. DESCRIPTION OF MULTIYEAR PROCUREMENT

The concept of MYP for a major weapon system involves contracting for more than one year but not more than five year's requirements in one negotiation. The result is one document binding the contractual parties to a longer, more stable, relationship. The demand is fixed at contract conception which allows accurate production and material requirements forecasting.

Although the government commits itself to a contract extending beyond the current fiscal year, the funding is still appropriated by Congress annually. If Congress decides not to appropriate funds for subsequent years under a multiyear contract, they can "cancel" the contract. As a result of this cancellation the government would be liable for certain unrecovered costs incurred in conjunction with future year buys. Typical charges associated with this are nonrecurring costs such as capital investments and employee training.

Cancellation is a term unique to MYP. The concept of contract cancellation involves an unfunded liability which the government incurs at contract conception. The current limit, established by the FY 1982 Defense Authorization Bill is \$100 million. For each multiyear contract the government has a potential outstanding unfunded liability of \$100

million. This is one of the most restricting elements of the entire MYP program.

The passage of the FY 1985 Department of Defense Appropriation Act prohibited the use of a "Hybrid Multiyear."

A Hybrid MYP is distinguished from a Classic MYP by including recurring costs in the cancellation ceiling to protect the contractor's investment of his own funds in Economic Order Quantity (EOQ) material purchases.
[Ref. 9: p. 1]

This legislation forced the services to fully fund the EOQ to the limits of the governments liability. Where in previous years MYP actions the EOQ could be included as a part of the unfunded liability, the services now have to commit current year funds to take advantage of EOQ material purchases. This creates a funding bow wave in reverse of normal program expectations. The up front higher initial costs to save on purchases in future years.

As in all government contracts there exists the option to terminate a contractor for convenience. However, because of the lengthy review process involved in establishing a MYP it is not an action generally contemplated. As with a cancellation the government would be liable for the remaining portion of the unfunded liability as well as authorized costs incurred to date of termination.

D. CRITERIA FOR THE USE OF MYP

The identification, review, selection, and approval process to utilize MYP for a major weapon system is a complex, exacting evolution. Congress is emphatic about their control over what program's are to be acquired employing MYP. Section 8052 of the FY 1985 Department of Defense Appropriation Act states: "That no part of any appropriation contained in this Act shall be available to

initiate multiyear procurement contracts for major systems unless specifically provided herein."

Deputy Secretary Carlucci identified the following six criteria in his May 1, 1981 policy memorandum on MYP. These criteria have to be satisfied before a program can be forwarded to Congress for consideration as a MYP. These same criteria have been incorporated into the DoD Budget Guidance Manual.

1. Benefit to the Government. A multiyear procurement should yield substantial cost avoidance or other benefits when compared to conventional annual contracting methods. MYP structures with greater risk to the government should demonstrate increased cost avoidance or other benefits over those with lower risk. Savings can be defined as significant either in terms of dollars or percentage of total cost.
2. Stability of Requirement. The minimum need (e.g., inventory or acquisition objective) for the production item or service is expected to remain unchanged or vary only slightly during the contemplated contract period in terms of production rate, fiscal year phasing, and total quantities.
3. Stability of Funding. There should be a reasonable expectation that the program is likely to be funded at the required level throughout the contract period.
4. Stable Configuration. The item should be technically mature, have completed RDT&E (including development testing or equivalent) with relatively few changes in item design anticipated and underlying technology should be stable. This does not mean that changes will not occur but that the estimated cost of such changes is not anticipated to drive total costs beyond the proposed funding profile.
5. Degree of Cost Confidence. There should be a reasonable assurance that cost estimates for both contract costs and anticipated cost avoidance are realistic. Estimates should be based on prior cost history for the same or similar items or proved cost estimating techniques.
6. Degree of Confidence in Contractor Capability. There should be confidence that the potential contractor(s) can perform adequately, both in terms of government furnished items (material, data, etc.) and their firm's capabilities. Potential contractors need not necessarily have previously produced the item.
[Ref. 10]

E. ADVANTAGES AND DISADVANTAGES OF MULTIYEAR PROCUREMENT

1. Advantages

When one talks of the advantages or disadvantages of MYP the basis for comparison is the annual procurement process. There exists almost universal agreement that the advantages or benefits derived from the implementation of MYP far outweigh the disadvantages. At least when the final evaluation is conducted, there has proven to be a consistent cost reduction ranging from 10 to 20 percent of the unit procurement costs with the use of MYP [Ref. 11: p. 112].

There is a degree of uncertainty as to the exact contribution of the various advantages which contribute to this cost savings figure. A recent audit conducted by the General Accounting Office estimated potential savings from the 12 MYP candidates submitted to Congress for Fy 1985 at 10.5% [Ref. 12: p. 13]. Table I from that report lists the source of savings and the related percents.

TABLE I
GAO ESTIMATED SAVINGS

<u>Source of Savings</u>	<u>Percent of Total Savings</u>
Inflation	30.6
Vendor procurement	47.9
Manufacturing	17.0
Other	4.5

This report identified the single largest contributor to forecasted savings as the economic procurement of materials from subcontractors. This finding receives additional support from an article in Program Manager Magazine by James R. Gilda, where he stated "EOQ is possibly the major cost saver in MYP" [Ref. 13: p. 39].

The Federal Acquisition Regulation, Section 17.102-3, encourages the use of MYP if one or more of the following eight advantages exist:

1. Lower costs.
2. Enhancement of standardization.
3. Reduction of administrative burden in the placement and administration of contracts.
4. Substantial continuity of production or performance, thus avoiding annual startup costs, preproduction testing costs, madeready expenses, and phaseout costs.
5. Stabilization of contractor work forces.
6. Avoidance of the need for establishing and "proving out" quality control techniques and procedures for a new contractor each year.
7. Broadening the competitive base with opportunity for participation by firms not otherwise willing or able to compete for lesser quantities, particularly in cases involving high startup costs.
8. Provide incentives to contractors to improve productivity through investment in capital facilities, equipment, and advanced technology. [Ref. 14: p. 17.2]

Other potential advantages recognized by members of industry and government are:

1. The increased effectiveness of long-range planning. This benefit permeates through the very fiber of almost every identified advantage. The ability to accurately forecast demand for a five year period provides a distinct advantage in dealing with business decisions and uncertainties.
2. Longer amortization of startup and capital investment costs. Where a contractor knows that he has the ability to spread out nonrecurring costs and costs of capitalization, he can provide a lower unit price for the contract. [Ref. 15: p. 22]

2. Disadvantages

As to be expected with any program there are disadvantages as well as advantages. The important concept in any operation is to be aware of the relative advantages and disadvantages and to most effectively gain from selective employment of the variables.

RADM Ferraro in his point paper on "Recent Initiatives in Multiyear Contracting" cited the following as possible disadvantages of utilizing MYP.

1. Possible program funding shifts burdening earlier years to cover recurring costs decisions, precluding use of such early funds for other program priorities, given fixed fiscal guidance.
2. Desire for increased quantity flexibility over future year requirements due to uncertainty regarding outyear requirements and budget priorities.
3. Possible lack of incentive for contractor cooperation in a sole source environment.
4. The difficulty which is present because of a need for an early decision in the PPBS process, which is required in order to permit the presentation of a proper funding profile.
5. Need to structure better escalation provisions.
6. Difficulties in validating savings.
7. discouragement of early investments in recurring costs due to high interest rates.
8. Possible early economical procurement of items with near term obsolescence potential.
9. Potential loss of a competitive base. [Ref. 16: p. 3]

Expanding disadvantage No. 9 above is one of the areas of emphasis for this research. The use of MYP results in long production runs by a single contractor, and subsequently in decreased costs because of economies of scale. However, is the true cost of this acquisition strategy a long-term decrease in the alternative sources of supply who have no opportunity for contracts throughout the life of the MYP contract?

At resolicitation of the multiyear contract will there be any true competitors who have been able or willing to maintain the technology, personnel, and production facilities to be a viable competitor against the incumbent contractor?

This question flows down to the subcontractor level as the true area of available competition in a MYP contract. As reflected in Table I the GAO estimated that almost 48% of the savings generated by utilizing MYP were derived from the reduced cost of subcontracted effort. The questionnaire used in conjunction with this research presented this question to subcontractors currently working under a Navy major weapon system MYP contract. The survey results are presented in Chapter V.

The recently published Acquisition Strategy Guide identified some additional disadvantages that could arise from MYP.

1. There is no incentive for nonparticipating contractors to remain technically competent.
2. A single contractor establishes a long term agreement which could restrict technology development on the part of nonparticipating contractors [Ref. 17: pp. 5-39].

Two concerns actively discussed by Congress are the loss of flexibility and the unfunded liability created with a MYP contract. The current annual procurement system allows Congress the luxury of yearly changes to programs. The decision to utilize MYP carries a long-term commitment by both parties. There does exist the option to cancel a MYP but the costs associated with such an action severely restrict use. This encompasses the other concern of the unfunded liability which supports the contractors investment in nonrecurring costs. These potential liabilities deserve serious consideration before any cancellation action is undertaken.

III. COMPETITION

A. INTRODUCTION

The concept and philosophy of free and aggressive competition is a basic element of the American business system. It is a natural way of life for most Americans to "shop around" to identify the most advantageous price for a particular item. However, the final selection of an item is not only a consideration of the price at which it is offered, but several other factors as well. Some of these other considerations include: the level of service after the sale that a particular vendor offers; the reputation and stability of each vendor in the community; and the amount and quality of pre-sale counseling and advice offered by the vendor.

As identified above, we as individuals strive to obtain the maximum product and service for our limited funds. We are price conscious shoppers, but when the final decision is made the various other factors are also weighted in the selection process.

The United States Government's acquisition process can be easily compared with the same basic selection criteria as those of an individual shopper. In its role as a procuring activity, the government's goal is not to enter the market with its overbearing power and dominate the transaction. The government is responsible for the prudent expenditure of public funds in accordance with all the existing statutory laws and departmental regulations.

Obtaining materials and services at the right price is the key to a successful procurement. "Professional buyers interpret the right price to mean a price that is fair and reasonable to both the buyer and seller" [Ref. 18: p. 149]. Although the price is a very important consideration,

obtaining an inexpensive item that doesn't properly perform the required function is of no value. An expansion of selection criteria to include the appropriate delivery schedule, the proper and adequate performance, and the future supportability of the item more correctly describes the procurement process.

The subject of competition is an extremely popular and controversial one that has received an extensive amount of attention in recent years. It is not the intent of this research effort to provide an indepth review and analysis of all available literature. Rather, this effort is directed at providing an encapsulated overview of competition to establish a framework from which to continue with the research.

B. TYPES OF COMPETITION

The two types of competition that can be generated for a particular item are price competition and design/technical competition. Although the two utilize the concept of competition to satisfy a goal, they are drastically different approaches to satisfying the requirement.

Price competition is extensively used in the acquisition of small purchase items that are of an "off the shelf" nature. This method requires the complete and accurate description of the desired item in order to enable the competitors to be evaluated on the price of their bids. According to a text by Dobler, Lee and Burt on Purchasing and Materials Management, the following criteria are required before competitive bidding can be used:

1. The dollar value of the specific purchase is large enough to justify the expense, to both the buyer and seller.
2. The specifications of the item or service to be purchased are explicitly clear to both the buyer and seller.
3. The market consists of an adequate number of sellers.

4. The sellers comprising the market are technically qualified and actively want the contract and, therefore, are willing to price competitively to get it.
5. The time available is sufficient for using this method of pricing - vendors competing for large contracts must be allowed time to obtain and evaluate bids from their subcontractors before they can calculate the best price. [Ref. 19: p. 157]

Design or technical competition occurs when the selection emphasis is aimed not at price but at the design aspects of an item. This procedure is the one most prevalent in the acquisition of major weapon systems. It is impractical to restrict the selection of a weapon system that will be used for the next 30 years to the initial price of the item. More serious consideration must be given to the performance and supportability for the life of the system.

C. THE DEPARTMENT OF DEFENSE'S POSITION ON COMPETITION

Secretary of Defense, Casper Weinberger, drafted a memorandum for the Secretaries of the Military Departments in September of 1982 which emphasized his views on competitive procurement.

The Department of Defense components are to plan maximum emphasis on competitive procurement. All personnel involved in the acquisition process from the first identification of the requirement through the execution of the purchase should recognize this responsibility. contracts will be placed on other than a competitive basis only when clearly justified. [Ref. 20: p. 1]

The Competition in Contracting Act of 1984 (CICA), initiated several significant changes to the governments acquisition process. The main direction of this Act was to restrict the use of non-competitive procurement avenues. It identified the following seven circumstances where other than competitive procedures can be utilized for an acquisition.

1. Property or services are available from only one source and no other type of property or services will satisfy the needs of the agency (includes follow-ons and unsolicited research proposals);
2. The agency's need is of such unusual and compelling urgency that the United States would be seriously injured unless the agency is permitted to limit the number of sources (must still obtain maximum competition practicable);
3. It is necessary to award to a particular source/ sources in order to maintain a facility in case of national emergency or to achieve industrial mobilization or to establish or maintain an essential engineering, research, or development capability provided by an educational or other non-profit institution or an FFRDC;
4. It is required by the terms of an international agreement or treaty or by written direction of a foreign government who is reimbursing the agency for the cost of the procurement;
5. The statute expressly authorizes or requires procurement through another agency or from a specified source or the agency's need is for a brand-name commercial item for authorized resale;
6. Disclosure of the agency's needs would compromise national security unless the number of sources is limited (must still obtain maximum practicable competition);
7. The head of an agency determines it is necessary in the public interest to use other than competitive procedures and gives Congress 30 days written notice before award (non-delegable). [Ref. 21: p. 3]

D. SUBCONTRACTING COMPETITION

Studies have indicated that as much as 50% of prime contract funds are passed through the prime to its subcontractors [Ref. 22: p. 8]. The three prime contractors who responded to this research survey reported values of 20, 23, and 42 percent for the subcontracted portion of their multi-year contract. As these figures indicate the subcontracting activities and practices can have a substantial impact on the final price of an item. Because of this, the government exerts considerable effort in reviewing the subcontracting activity of its prime contractors.

The Federal Acquisition Regulation states that "if the contractor has an approved purchasing system, consent to

subcontracts is not required under other fixed-price prime contracts, except for any subcontracts selected for special surveillance" [Ref. 23: p. 44-2].

The procedure used to certify a contractor's purchasing system is a Contractor's Purchasing Systems Reviews (CPSR). The objective of a CPSR is to evaluate the efficiency of a contractor's purchasing system. The Administrative Contracting Officer uses the data gathered in the review as a basis for granting or withholding approval of a contractor's purchasing system. A CPSR is conducted for a contractor if his sales to the government are expected to exceed \$10 million during the next 12 months and remains in effect for a period of up to three years.

A CPSR requires the complete evaluation of a contractor's purchasing system. Special attention is given to:

1. The degree of price competition obtained;
2. Pricing policies and techniques, including methods of obtaining accurate, complete, and current cost or pricing data; and certification as required;
3. Methods of evaluating subcontractors' responsibility;
4. Treatment accorded affiliates and other concerns having close working arrangements with the contractor;
5. Policies and procedures pertaining to labor surplus area concerns and small business concerns, including small disadvantages business concerns;
6. Planning, award, and postaward management of major subcontract programs;
7. Compliance with Cost Accounting Standards in awarding subcontracts;
8. Appropriateness of types of contracts used. [Ref. 24: p. 44-3]

The subcontracting activities associated with a major weapon system contract are big business. Serious consideration and attention to selecting subcontractors should be exercised before one is selected because the choice will have a significant impact on the final cost and timely delivery of the end item.

Prime contractors enter into subcontract agreements for a variety of reasons. A major reason would be to avoid the risk associated with the manufacture of an item. Once a good working relationship has been established with a particular vendor, there exists a propensity to establish long-term pricing arrangements with that vendor. This effectively reinforces the continuing use of a single vendor but limits the opportunity for other vendors to compete for the business.

Factors that would normally direct a prime contractor to look for a new subcontractor are:

1. Serious work stoppages caused by delinquencies;
2. Quality problems;
3. Unacceptable costs;
4. Deteriorating market share;
5. New technical requirements;
6. Poor vendor relations. [Ref. 25: p. 11]

E. ADVANTAGES AND DISADVANTAGES OF COMPETITION

1. Advantages

Competition was included in Deputy Defense Secretary Frank. C. Carlucci's 32 initiatives as a key element in the Acquisition Improvement Program. In a July 1981 memorandum he stated:

We believe that it (competition) reduces the cost of needed supplies and services, improves contractor performance, helps to combat rising costs, increases the industrial base, and ensures fairness of opportunity for award of government contracts. [Ref. 26: p. 29]

Rear Admiral Platt, the Navy's Competition Advocate General, stressed the importance of a strong emphasis on the use of competition in procurement. In his first year report for competition advocates, he stated: "We are extensively

increasing the use of competition in procurement to reduce costs, improve contractor performance, and strengthen the industrial base" [Ref. 27: p. 6].

2. Disadvantages

The identified potential disadvantages associated with utilizing competition for procurement have to be carefully considered. Some of the identified disadvantages associated with competition are:

1. Cost of preparing detailed drawings and specifications;
2. Danger of reduced quality and less effective intergation of systems;
3. Legal restrictions on tranferring propriety rights of original producer's "manufacturing know-how;"
4. Possession of immovable facilities by the original producer;
5. Economic disadvantage of splitting orders;
6. Cost of duplicate special tooling;
7. Danger of losing spare part interchangeability because of a new supplier's latitude in changing production tolerances. [Ref. 28: p. 22]

Each acquisition has to be evaluated as a seperate business decision and must be made with the full understanding of the laws concerning competition. Every situation is not conducive to full and open competition, and as such CICA identified the seven situations where other than competitive procurement could be used. However, one must recognize that competition is the desired acquisition method.

IV. PRIME CONTRACTOR SURVEY DATA PRESENTATION

A. INTRODUCTION

This segment of the research effort centered on the Navy's multiyear procurement prime contractors for a major weapon system. Utilizing these parameters as a means to focus the study, surveys were sent to five Navy MYP prime contractors. These five contractors were: Grumman Aerospace Corporation; Raytheon Company; Sikorsky Aircraft Division; Honeywell Incorporated; and FMC Corporation.

The survey questionnaire was preceded by phone conversations with representatives of each of the above firms. In an effort to insure that the firms would be encouraged to provide accurate and complete responses, anonymity for individual firm's responses was guaranteed. Hence, the researcher did not attempt to isolate or identify any one firm's responses during the analysis of the data.

Appendix A provides a complete copy of the survey questionnaire utilized for this section. It was mailed in mid July 1985, to each of the five prime contractors with a requested return date of 20 August 1985. The researcher anticipated that it would require approximately one hour to complete the questionnaire. This time estimate was dependent upon the automated ability of the firms to readily recall historic data.

Three of the firms completed and returned the questionnaire well before the requested deadline. After the return deadline had passed the remaining two firms were contacted by phone to try to prompt a response. One firm stated that the corporate leaders had decided not to participate in the research effort. The other firm expressed an interest in the research but could not devote the time to research their records to complete the questionnaire.

B. SURVEY COMPOSITION

The survey questionnaire consisted of 24 questions which elicited objective and subjective responses concerning subcontracting procedures. Additionally several demographic questions were posed to obtain data concerning both the individual respondent and the respondent's company. This demographic information was requested to provide face validity for the survey results.

C. SURVEY RESPONSE LIMITATIONS

The small population of multiyear prime contractors proved to be a limiting factor in data analysis. Although the prime contractor survey response rate was 60% (3 of 5 firms), the internal record keeping procedures of the firms were not always compatible with the questions presented in the survey.

One element of this study was to try to identify any subcontracting procedural differences employed under the MYP contract. One firm had a production break between the last item produced and the award of the current multiyear contract of over ten years. This extensive period eliminated the comparison questions for annual verses multiyear contract procedures. Another firm's data collection system severely limited their ability to provide comparative data for annual and multiyear contract procedures.

D. SURVEY RESPONSES - QUESTIONS 1 THROUGH 24

1. Respondent's Area of Responsibility

Question: Which answer best describes your area of responsibility in the firm?

- A. Contracts / Purchasing
- B. Subcontracting
- C. Materials Movement
- D. Marketing
- E. Business Financial Manager
- F. Other (please specify)_____

Objective: To establish the internal position within the contractor of the respondent completing the questionnaire. This was designed to add validity to the survey's returned due primarily to the knowledgeable position of the respondent. It ensured the inclusion of valid responses to the survey by allowing the researcher the opportunity to screen for valid job positions of the respondents.

Response: Two of the respondents worked in the area of contracting and the third worked as a business group manager. All the respondents were in positions which would require their involvement with the multiyear contract. See Figure 4.1.

<u>Answers</u>	<u># Responses</u>
A	2
B	
C	
D	
E	
F	1

Figure 4.1 Response To Question 1.

2. Experience in Current Subspecialty

Question: How many years of experience do you have in the subspecialty indicated in question #1?

- A. Less than 1 year.
- B. 1 to 3 years.
- C. 4 to 6 years.
- D. 7 to 9 years.
- E. 10 years or more.

Objective: To elicit the experience level of the individuals completing the questionnaire. Although years of experience is no accurate measure of the level of expertise, it does add a certain amount of creditability to an individual.

Response: Two of the respondents had worked in their present subspecialty for more than 10 years. The third respondent was relatively new to his subspecialty but did possess 1 to 3 years of experience. See Figure 4.2.

<u>Answers</u>	<u># Responses</u>
A	
B	1
C	
D	
E	2

Figure 4.2 Response To Question 2.

3. MYP Experience

Question: How many years have you been working with a Government multiyear contract? Either as a prime or subcontractor.

- A. none
- B. Less than 1 year.
- C. 1 to 3 years.
- D. 4 to 5 years.
- E. 5 years or more.

Objective: To insure that the individual completing the survey had existing experience working with a multiyear contract. Any response returned without a positive answer in this area would not have been considered valid for the purposes of this research.

Response: All the respondents had between 1 to 5 years of experience working with government multiyear contracts. It would have been unlikely that an answer of greater than five years would have been received because MYP was reestablished in 1982. See Figure 4.3.

<u>Answers</u>	<u># Responses</u>
A	
B	
C	2
D	1
E	

Figure 4.3 Response To Question 3.

4. Defense Related Business

Question: What percentage of your firm's business is with the Department of Defense (DoD) either as a direct supplier or indirectly through another contractor?

_____ %

Objective: To illustrate the relationship between the contractor and the government. These figures represent those of the respondents division within the corporate structure.

Response: All of the companies revealed almost exclusive business arrangements between themselves and the Department of Defense. See Figure 4.4.

<u>Answers</u>
1. 95%
2. 96%
3. 98%

Figure 4.4 Response To Question 4.

5. MYP Generated Business

Question: What percentage of your firm's DoD business is as a contractor supplying material under a MYP contract?

_____ %

Objective: To identify the segment of the firm's total business with the DoD that is the result of a multi-year contract.

Response: The responses varied from a low of 10% to a high of 48% in response to this question. These figures indicate a considerable segment of the firm's business is the result of a multiyear contract. See Figure 4.5.

	Answers
1.	10%
2.	48%
3.	20%

Figure 4.5 Response To Question 5.

6. Unsolicited Bids Under MYP

Question: We have experienced a _____ percent increase in the number of unsolicited bids for business generated under the Navy MYP contract as compared to annual contracts for the same materials.

_____ %

Objective: To identify any increase in unsolicited bids received under the multiyear contract. An increase in the number of subcontractors bidding for business under the MYP would indicate the increased desirability of this type of contract. A key factor here would be in the method used by the prime contractor to disseminate this information to interested subcontractors. The literature reviewed concerning MYP indicated that more subcontractors would be expected to bid under a multiyear agreement.

Response: The contractors who were able to reply to this question indicated no increase in the number of unsolicited subcontractors responding to the MYP subcontracted business. See Figure 4.6.

Answers

1. 0
2. 0
3. Unknown - Records not kept

Figure 4.6 Response To Question 6.

7. MYP Generated New Suppliers

Question: The number of new suppliers generated as a result of the MYP contract has been:

%

Objective: To identify the number of new vendors created for the prime contractor as a result of the MYP agreement. If the MYP contract did increase the level of competition it would be expected that more new vendors would be present.

Response: Only one contractor was able to provide a valid response to this question. That one reported a 5% increase in the number of new suppliers generated under the MYP contract. The other two responses were not valid for the purposes of this research. The response of 100% was from the company with a 10 year production break. They have experienced a completely new vendor population because of the extensive production gap. The other contractor did not have the ability to provide a valid response. See Figure 4.7.

Answers

1. 100%
2. 5%
3. Unknown - Records not kept

Figure 4.7 Response To Question 7.

8. MYP Subcontracted Value

Question: What percent of the dollar value of the Navy's MYP contract was subcontracted out by your firm?

_____ %

Objective: To identify what percent of the total multiyear contract was subcontracted out by the prime. According to a research effort by Steven Smith "as much as 50% of prime contract funds are passed through the prime to it's subcontractors" [Ref. 29: p. 8]. This question was presented to ascertain the relative position of the multi-year primes to those primes operating under annual contracts.

Response: All the respondents reported percentages of lesser value than the above study indicated could be expected. Two of the firms reported subcontracts of about 20% of the MYP contract value while the third firm had subcontracted 42% of the MYP contracts value. See Figure 4.8.

<u>Answers</u>	
1.	23%
2.	42%
3.	20%

Figure 4.8 Response To Question 8.

9. Multiyear Subcontracts

Question: What percent of the subcontracts awarded to procure material for the Navy's MYP contract were of a multiyear design?

_____ %

Objective: To reveal the level of flow-down of multiyear contracting to the subcontractor level. A noted

advantage of multiyear contracting is its stabilizing effect on the contractor. This stabilizing effect is the result of a larger order quantity with a longer order period. These factors combine to reduce the business risk associated with annual procurements.

Response: Two companies Identified almost exclusive use of multiyear contracts with their subcontractors. The contracts varied in the delivery of materials from large infrequent (annual) deliveries to small frequent (monthly) ones. One firm reported little use of multiyear subcontracts. See Figure 4.9.

Answers	
1.	100%
2.	95%
3.	10%

Figure 4.9 Response To Question 9.

10. EOQ Subcontracts

Question: What percent of the subcontracts awarded to procure material for the Navy's MYP contract were one time buys of material for either large EOQ orders or small quantities?

_____ %

Objective: To identify what percent of the subcontracted effort of the prime's was aimed at a one time order for their requirements. This question is linked to question No. 9 in that it is designed to obtain data concerning the multiyear flow-down to the subcontractor level.

Response: The firm that responded with a very low answer of ten percent in question No. 9 reported a 90% use of one time material buys. The other two firms reported values of 50% and 95% for this question. These two firm's

responses to question No. 9 and No. 10 appeared to be inconsistent. The firms reported a high use of multiyear contracting and a high use of one time material purchases. Follow-up questioning revealed the fact that they often procured a one time large quantity for delivery over an extended period. See Figure 4.10.

Answers

1. 50%
2. 95%
3. 90%

Figure 4.10 Response To Question 10.

11. Competitive Subcontracts (MYP)

Question: Please provide the percentages for the processes your firm utilized in selecting its subcontractors to provide material under the Navy's MYP contract.

<u>CATEGORY</u>	<u>PERCENT</u>
A. Competitive	_____
B. Follow-on (*)	_____
C. Sole Source	_____
D. Other (Please specify)	_____
	100%

Objective: This question was included to obtain procedural methods of the prime contractors for awarding their subcontracts. An advertized benefit of using MYP is the increased competition. This question was directed specifically at the procedures used for the existing multi-year contract.

Responses: Firm No. 1 reported that 30% of it's subcontracts were let on a competitive basis. The remaining 70% were awarded to other seperate divisions within the corporation. This segment was not always awarded on a

competitive bases. Instead it was the result of their company's make or buy program analysis. Firm No. 2 reported that the major portion of their subcontracts were awarded to a contracting "teammate." This teammate was responsible for a major subsystem of the weapon. The 36% for "other" was awarded to other separate divisions within the corporation as a result of their make or buy program. Only 14% of their subcontracts were let on a competitive basis. Firm No. 3 was unable to provide any data for this question due to the limitations of their automated record system. See Figure 4.11.

<u>Answers</u>	<u>Company 1</u>	<u>Company 2</u>	<u>Company 3</u>
A	30	14	Unknown
B	--	45	
C	--	5	
D	70	36	

Figure 4.11 Response To Question 11.

12. Competitive Subcontracts (Annual)

Question: Please provide the percentages for the processes your firm utilized in selecting its subcontractors under previous Navy annual contracts for material now under MYP contract.

<u>CATEGORY</u>	<u>PERCENT</u>
A. Competitive	_____
B. Follow-on (*)	_____
C. Sole Source	_____
D. Other (Please specify)	_____
	100%

Objective: This question was directed specifically at the procedures used by the firm for previous annual contracts of the material now under the MYP contract. It

was included to provide comparative data for question No. 11.

Response: Firm No. 1 had experienced an extensive production break of over 10 years. As such, they were unable to provide a valid response to this question. Firm No. 2 reported almost identical percentages for each category as was provided for question No. 11. There was a 2% decrease in sole source subcontracts which increased the competitive population by the same amount. Firm No. 3 was unable to provide any data for this question due to the limitations of their automated record system. See Figure 4.12.

<u>Answers</u>	<u>Company 1</u>	<u>Company 2</u>	<u>Company 3</u>
A	N/A	12	Unknown
B		45	
C		7	
D		36	

Figure 4.12 Response To Question 12.

13. Subcontract Type (MYP)

Question: Please provide the percentages for the following types of subcontracts utilized by your firm to procure materials for the existing Navy MYP contract.

<u>TYPE</u>	<u>PERCENT</u>
A. Firm Fixed Price	_____
B. Other Fixed Price	_____
C. Cost Type	_____
D. Other (Please specify)	_____
	100%

Objective: To identify the types of contracts being utilized by the prime contractors for procurement of material. The type of contract used can have a significant

impact on the risk to both parties of the agreement. The U.S. Navy is limited to using either a firm-fixed-price, a fixed-price with economic price adjustment, or a fixed-price incentive contract in it's multiyear contracting [Ref. 30: p. 17-2].

Response: Firms No. 1 and No. 3 reported exclusive use of firm-fixed-price subcontracts. Firm No. 2 reported 81% of it's subcontracts were of an other fixed-price nature. Follow-up questioning identified that they are actually using a firm-fixed-price contract with a specially designed performance award agreement with their subcontractors. They were unwilling to provide details of their performance award criteria. See Figure 4.13.

<u>Answers</u>	<u>Company 1</u>	<u>Company 2</u>	<u>Company 3</u>
A	100	19	100
B	---	81	---
C	---	--	---
D	---	--	---

Figure 4.13 Response To Question 13.

14. Subcontract Type (Annual)

Question: Please provide the percentages for the following types of subcontracts your firm utilized to procure materials for previous Navy annual contracts, for the same major weapon system now under MYP contract.

<u>TYPE</u>	<u>PERCENT</u>
A. Firm Fixed Price	_____
B. Other Fixed Price	_____
C. Cost Type	_____
D. Other (Please specify)	_____
	100%

Objective: This question was presented to identify the types of contracts used by the primes for their subcontracts for the same major weapon system now under MYP contract. It was included to provide comparative data for question No. 13. It was designed to reflect any procedural changes between the previous annual contract and the current multiyear contract.

Response: Firm No. 1 was unable to provide any comparative data because of the extensive production gap. Firms No. 2 and No. 3 reported the exact same ratios for this question as for the previous one. The firms did not modify their subcontract type as a result of the multiyear contract. See Figure 4.14.

<u>Answers</u>	<u>Company 1</u>	<u>Company 2</u>	<u>Company 3</u>
A	N/A	19	100
B		81	---
C		--	---
D		--	---

Figure 4.14 Response To Question 14.

15. Material Difficult to Compete

Question: It is difficult to generate competition for some of our products for the Navy's MYP contract.

___(A)___% of our procurement actions, which represents

___(B)___% of the contract value, falls into this category.

A. _____% (procurement actions)

B. _____% (contract value)

Objective: Historically a major cited reason for not competing an item has been it's specialized nature which demanded one certain manufacturer. This question was designed to identify that segment of the primes requirements that fall into this category. It also requested the relative percent of this population to the contract total value.

Response: Firm No. 1 reported that 20% of their procurement actions which represented 25% of the contract value fell into this category. A full 25% of the value of the multiyear contract was of a nature that limited competition. This firm also reported , in question No. 11, that 70% of the subcontracted material was awarded to other divisions within the corporation. Firm No. 2 reported that 80% of their procurement actions which represented 9% of the contract value fell into this category. This firm reported in question No. 11 that only 14% of its subcontracted activity was acquired utilizing a competitive method. Firm No. 3 was unable to provide any data for this question due to the limitations of their automated record system. See Figure 4.15.

<u>Answers</u>	<u>Company 1</u>	<u>Company 2</u>	<u>Company 3</u>
A	20	80	Unknown
B	25	9	

Figure 4.15 Response To Question 15.

16. Easily Competed Material

Question: Our experience has shown that it is easy to generate competition for ___(A)___ % of our procurement actions, which represents ___(B)___% of the contract value for the Navy's MYP contract.

A. _____% (procurement actions)

B. _____% (contract value)

Objective: This question was designed to reverse the situation presented in question No. 15. It was intended to identify the population of subcontracts that would be of a nature readily conducive to competition.

Response: Firm No. 1 replied that the remaining 80% of its procurement actions fell into this "easy to generate

competition" category with a value of 75% of the subcontracted effort. This response casts a critical eye to the earlier response of only 30% of its subcontracted effort being awarded in a competitive nature. Firm No. 2 replied that 20% of the remaining procurement actions fell into this "easy to generate competition" category with a value of 57% of the subcontracted effort. Company No. 2 accounted for 100% of it's procurement actions in questions 15 and 16, but only for 66% of it's contract value. The unaddressed 34% of the contract's value invalidates their response to these questions. Firm No. 3 was unable to provide any data for this question due to the limitation of their automated record system. See Figure 4.16.

<u>Answers</u>	<u>Company 1</u>	<u>Company 2</u>	<u>Company 3</u>
A	80	20	Unknown
B	75	57	

Figure 4.16 Response To Question 16.

17. Make or Buy Program

Question: Please provide comparative information for your firm's "make or buy" program under previous Navy annual contracts and the existing Navy MYP contract.

	<u>ANNUAL</u>			<u>MYP</u>		
	<u># ITEMS</u>	<u>/</u>	<u>\$ VALUE</u>	<u>#ITEMS</u>	<u>/</u>	<u>\$ VALUE</u>
Make	_____		_____	_____		_____
Buy	_____		_____	_____		_____

Objective: To identify any changes in the make or buy programs for the prime contractors. An identified avenue for reducing contract risk is to subcontract more of the effort out. With the use of a multiyear contract, will the prime contractors subcontract less and increase their

manufacturing base to include items previously subcontracted?

Response: Firm No. 1 was unable to respond to this question because of the extensive production break between the previous contract and the current MYP contract. Firm No. 2 reported no change in the mix of its make or buy decisions. Firm No. 3 was unable to provide the specific item number for make or buy but they did provide the contract percent ratios for annual compared to multiyear. They did report an increase of 9% for items that shifted from a buy to a make decision. The final contract figure of 92% make reflects a decrease in opportunity for subcontractors to compete for business. This MYP contract was valued at \$160,000,000 which meant that only approximately 12 million dollars was passed on to subcontractors. This firm is a manufacturing oriented facility that normally produces most of it's requirements internally. See Figure 4.17.

<u>Answers</u>		<u>Company 1</u>			
Make	N/A				
Buy	N/A				
		<u>Company 2</u>			
Make	7	32 M	7	108 M	
Buy	1690	68 M	1690	188 M	
		<u>Company 3</u>			
Make	?	83 %	?	92 %	
Buy	?	17 %	?	8 %	

Figure 4.17 Response To Question 17.

Questions 18 through 23 were designed to elicit a subjective response from the individuals completing the questionnaire. The questions were directed at the effects of multiyear procurement on their subcontractors. A seven

point Likert scale was chosen for the responses because it offers more reliability than smaller scales and less complexity than larger scales. [Ref. 31: p. 595].

18. Effect of Increased Use of MYP

Question: The increased governmental use of MYP contracts would result in more vendors competing for my firms subcontracted business.

1-----2-----3-----4-----5-----6-----7
 STRONGLY MILDLY NEUTRAL MILDLY STRONGLY
 DISAGREE DISAGREE DISAGREE AGREE AGREE AGREE

Objective: To identify the opinions of the prime contractors for the influence of MYP on the number of subcontractors competing for their business.

Response: All the respondents reported agreement with the prospect of increasing the number of competing vendors as a result of MYP. In spite of this response, according to the earlier responses to question No. 7, the one valid reporting prime only reported a 5% increase in new suppliers as a result of MYP. None of the firms reported an increase in the number of unsolicited bids in response to question No. 6. See Figure 4.18.

<u>Likert</u>	<u>Rank</u>	<u># Answers</u>
1		
2		
3		
4		
5		
6		2
7		1

Figure 4.18 Response To Question 18.

The prime contractors were given the following situation to consider in formulating their responses to questions 19 through 23. "The unsuccessful bidding for a MYP

subcontract by one of vendors could result in up to 5 years before another opportunity to compete for that material would occur. This would adversely affect it's ability to:"

19. Retention of Critical Personnel

Question: Retain critical personnel.

1-----2-----3-----4-----5-----6-----7
 STRONGLY MILDLY NEUTRAL MILDLY STRONGLY
 DISAGREE DISAGREE DISAGREE AGREE AGREE AGREE

Objective: To elicit the opinions of the survey respondents of the effects of a MYP on an "unsuccessful bidder" for a subcontract. Specifically on a firms ability to retain critical personnel in light of an extended period before contract resolicitation.

Response: All the respondents answered that a MYP contract would not adversely affect an unsuccessful bidders ability to retain critical personnel. See Figure 4.19.

<u>Likert</u>	<u>Rank</u>	<u># Answers</u>
1		2
2		1
3		
4		
5		
6		
7		

Figure 4.19 Response To Question 19.

20. Employee Training

Question: Maintain a high level of employee training.

1-----2-----3-----4-----5-----6-----7
 STRONGLY MILDLY NEUTRAL MILDLY STRONGLY
 DISAGREE DISAGREE DISAGREE AGREE AGREE AGREE

Objective: To elicit the opinions of the survey respondents of the effects of a MYP on an "unsuccessful bidder" for a subcontract. Specifically on a firms ability to maintain a high level of employee training in light of an extended period before contract resolicitation.

Response: All the respondents answered that a MYP contract would not adversely affect an unsuccessful bidders ability to maintain a high level of employee training. See Figure 4.20.

<u>Likert</u>	<u>Rank</u>	<u># Answers</u>
1		
2		1
3		2
4		
5		
6		
7		

Figure 4.20 Response To Question 20.

21. Technology Advances

Question: Keep up with technology advances in the industry.

1-----2-----3-----4-----5-----6-----7
 STRONGLY MILDLY NEUTRAL MILDLY STRONGLY
 DISAGREE DISAGREE DISAGREE AGREE AGREE AGREE

Objective: To elicit the opinions of the survey respondents of the effects of a MYP on an "unsuccessful bidder" for a subcontract. Specifically on a firms ability to keep up with technology advances in the industry in light of an extended period before contract resolicitation.

Responses: All the respondents answered that a MYP contract would not adversely affect an unsuccessful bidders ability to keep up with technology advances in the industry. See Figure 4.21.

<u>Likert</u>	<u>Rank</u>	<u># Answers</u>
1		
2		2
3		1
4		
5		
6		
7		

Figure 4.21 Response To Question 21.

22. Production Capacity

Question: Maintain it's current production capability.

1-----2-----3-----4-----5-----6-----7
 STRONGLY MILDLY NEUTRAL MILDLY STRONGLY
 DISAGREE DISAGREE DISAGREE AGREE AGREE AGREE

Objective: To elicit the opinions of the survey respondents of the effects of a MYP on an "unsuccessful bidder" for a subcontract. Specifically on a firms ability to maintain it's current production capability in light of an extended period before contract resolicitation.

Response: Two respondents felt that a MYP contract would not adversely affect an unsuccessful bidders ability to maintain its current production capability. One respondent did feel that an unsuccessful bidder's production capability would suffer because of the length of the multiyear contract. See Figure 4.22.

23. Competition at Resolicitation

Question: Remain a viable competitor for the contract resolicitation.

1-----2-----3-----4-----5-----6-----7
 STRONGLY MILDLY NEUTRAL MILDLY STRONGLY
 DISAGREE DISAGREE DISAGREE AGREE AGREE AGREE

<u>Likert</u>	<u>Rank</u>	<u># Answers</u>
1		
2		1
3		1
4		
5		1
6		
7		

Figure 4.22 Response To Question 22.

Objective: To elicit the opinions of the survey respondents of the effects of a MYP on an "unsuccessful bidder" for a subcontract. Specifically on a firms ability to remain a viable competitor for the contract resolicitation in light of an extended period before contract resolicitation.

Response: All the respondents answered that a MYP contract would not adversely affect an unsuccessful bidders ability to remain a viable competitor for the contract resolicitation. See Figure 4.23.

<u>Likert</u>	<u>Rank</u>	<u># Answers</u>
1		
2		2
3		1
4		
5		
6		
7		

Figure 4.23 Response To Question 23.

24. MYP Subcontract Identification

Question: Do you convey information to your vendors that a particular contract is to satisfy requirements for a governmental MYP contract? If yes, how?

Objective: This question was presented to define how the prime contractor identified a particular subcontract as part of a MYP program.

Response: All the respondents indicated that this information was included as part of the Request For Proposal (RFP).

E. DISCUSSION OF SURVEY DATA

The job descriptions of the individuals completing the survey questionnaire's were all valid for the purposes of this research. Each individual was in a position which required a working knowledge of the elements of government contracting. Two of the respondents reported a relatively lengthy term in their current subspecialty of over 10 years. The third had worked in his current position for more than one year.

All of the respondents had over a year's worth of government MYP experience. This is a key factor establishing validity for the subjective responses to questions 18 through 23.

The firms responding to the survey all had extensive dealings with the Department of Defense. for the purposes of this survey the separate division's data was used for responding to the questions. This extensive business association with the DoD provides a perspective from which to view the firm's activities. These firms are heavily defense oriented and are aggressive contenders for government contracts.

The existing Navy multiyear contracts represent from a low of 10% to a high of 48% of the different firms business base. These are all substantial figures which account for major committments by the firms. The MYP contract for 48% of the firm's business adds a great deal of stability and planning ability to that business' operations.

An identified advantage to using multiyear procurement is its effect on luring new vendors into competition for government business. This influx of new subcontractors should have the effect of reducing prices because of the heavier competitive pressures. None of the firms reported any increase at all in the number of unsolicited bids for their subcontracted business. Additionally only one firm identified any increase in the number of new suppliers as a result of the MYP agreement. This increase was only 5%.

Two of the firms responding to the survey reported the percentage of subcontracted effort under the MYP contract at a lower than annual contract level. Their subcontracted activities were at 20% and 23% of the total contract value.

Two of the firms reported extensive use of a flow-down of multiyear contracts to the subcontractor levels. All three of the respondents identified the extensive use of economic order quantity buys for material under the MYP contract.

The two firms that provided data concerning their level of competitively awarded subcontracts indicated relatively low figures for these competitive awards. Values of 30% and 14% of the total subcontracted effort do not represent an expansion of competition as anticipated for a MYP contract. These same percentages for competitive subcontract awards existed under annual contracting methods. These figures appear even more questionable considering the same firms reported that 75% and 57% of the subcontract population were easily competed items.

There appeared to be no dramatic change in any of the prime contractor's make or buy program as a result of the MYP contract.

The subjective questions presented in the survey received almost unanimous agreement from the respondents. They all felt that an increased usage of MYP by the U. S.

Government would result in more contractors competing for their business.

None of the respondents thought that there would be any adverse affect on the unsuccessful bidders as a result of the MYP. This view was given in light of a longer period before any additional contracts would be generated under this program. None of the respondents felt that a unsuccessful subcontractor would not be able to remain a viable competitor upon contract resolicitation.

V. SUBCONTRACTOR SURVEY DATA PRESENTATION

A. INTRODUCTION

This portion of the research effort centered on subcontractors for the Navy's MYP contracts for major weapon systems. The companies and points of contact within each was obtained from the prime contractors for a Navy MYP contract.

This researcher contacted the five prime contractors identified in Chapter IV to obtain a listing of their vendors for the MYP contract. The initial objective was to obtain a complete listing of all vendors connected with the Navy's MYP contract. Once this list was received a random sample was going to be selected as survey subjects for this research.

None of the prime contractors had this vendor information easily retrievable on an automated system. Subsequently they were not willing to devote the man hours required to compile a complete listing of the vendors associated with the Navy's MYP contract.

The subcontractors associated with the Navy's MYP were an essential part of the research effort. In light of the data accumulation constraints of the prime contractors, the researcher's modified the request to obtain a list of as many vendors as possible.

The same three contractors that completed the prime contractor survey forms generated listings of subcontractors for the MYP contract. The combined list of subcontractors provided by these three primes totaled 76 points of contact within 74 different companies. There were two instances where personnel were identified within one company working on separate segments of the contract. These two individuals were sent surveys as separate reporting entities. Both of

these individuals returned the survey questionnaires. One indicated that he had over five years of experience with a government multiyear contract. The other reported no experience with a multiyear contract although he had over a year's experience in his current position. The other firm that was identified twice was listed as a subcontractor by two different prime contractors who identified separate points of contact within this one company. These two individuals were sent surveys as separate reporting entities. Only one of these completed and returned a survey questionnaire.

Appendix B is a complete listing of all the firms, both prime and subcontractors, that received survey questionnaire's as part of this research effort. The specific survey respondents are not identified in the listing or in the body of the text. This was a provision made as part of the agreement between the researcher and the surveyed firms to encourage more candid responses.

Conversations with the prime contractors identified extensive effort required to compile the requested list of vendors. One contractor reported it took 20 man hours to gather and prepare the requested list.

There were no specific criteria established by the researcher for the selection of vendors by the prime contractors. This researcher did not want to single out any one segment of the population by size or geographic location. The direction provided to the primes was to identify the first vendors that a review of their files generated. The resulting sample is a cross section of vendors ranging in size from very small to extremely large. They are geographically spread across the entire United States with twenty-two of the States represented in the survey.

Appendix C provides a complete copy of the survey questionnaire utilized for this section. It was mailed On July

25, 1985 to each of the 76 identified subcontractors with a requested return date of 30 August 1985. The researcher estimated that it would require approximately 15 minutes to complete this questionnaire.

An important consideration for the validity of the subcontractor survey responses was the fact that a particular individual had been identified within each firm by the prime contractor. The questionnaires were addressed to these identified individuals to increase the probability of receiving valid survey responses, with a valid response being one that was from a person who had experience with government multiyear contracts.

A total of 51 completed survey questionnaires were received in response to the 76 mailed out. This represents a return rate of 67.1% which is considered by this researcher to be of an acceptable level. No follow ups were generated to non-respondents to stimulate additional responses.

Three of the 51 returned surveys were excluded from the total valid survey summarization process. These three are reported for information purposes in Section E of this Chapter. The reason for their separation is that these firms reported no involvement with a government multiyear contract.

B. SURVEY COMPOSITION

The survey questionnaire consisted of 15 questions which elicited objective and subjective responses concerning the individual firm and MYP. Additionally, several demographic questions were posed to obtain data concerning both the individual respondent and the respondent's company. This demographic data was requested to provide face validity for the survey results.

C. SURVEY RESPONSES - QUESTIONS 1 THROUGH 15

1. Respondent's Area of Responsibility

Question: Which answer best describes your area of responsibility in the firm?

- A. Contracts / Purchasing
- B. Subcontracting
- C. Materials Movement
- D. Marketing
- E. Finance
- F. Other (please specify)_____

Objective: To establish the internal position within the subcontractor of the respondent completing the questionnaire. This was designed to add validity to the surveys returned due primarily to the knowledgeable position of the respondent. It insured the inclusion of valid responses to the survey by allowing the researcher the opportunity to screen for valid job positions of the respondents. All of the 48 respondents who completed the survey, and indicated that they had experience with a governmental multiyear contract were considered valid and included in the survey summaries.

Response: Answer D, marketing, had the greatest number of responses for the area of responsibility of the individual completing the survey. This response is primarily the result of the buyer/seller relationship between the prime contractor and his subcontractors. The point of contact generated by the prime's was normally the marketing/sales department of his vendor. The four respondents that selected answer F, other, identified their position as: (1) Company President, (1) General Management, (1) Corporate Management, and (1) Product Line Management. See Figure 5.1.

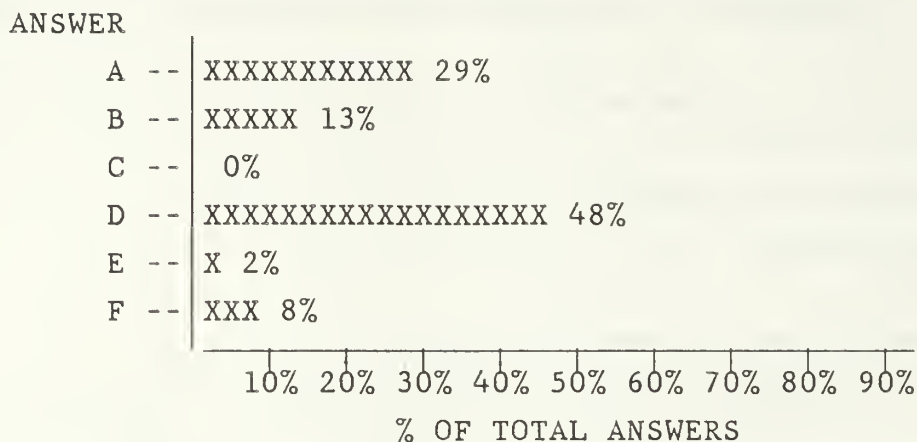


Figure 5.1 Response To Question 1.

2. Experience in Current Subspecialty

Question: How many years of experience do you have in the subspecialty indicated in question #1?

- A. Less than 1 year.
- B. 1 to 3 years.
- C. 3 to 5 years.
- D. 5 years or more.

Objective: To elicit the experience level of the individuals completing the questionnaire. Although years of experience is no accurate measure of the level of expertise, it does add a certain amount of creditability to an individual. It also provides a better base for developing informed responses.

Response: The vast majority of the respondents (92%) had more than five years of experience in their current area of responsibility. All of the respondents had at least a year's experience in their current subspecialty. See Figure 5.2.

ANSWER

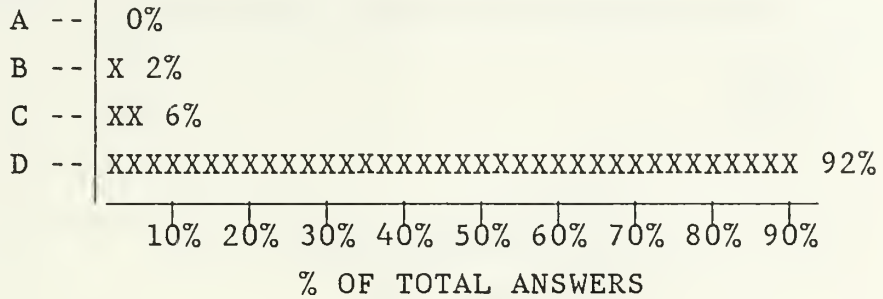


Figure 5.2 Response To Question 2.

3. MYP Experience

Question: How many years have you been working with a government multiyear contract? Either as a prime or subcontractor.

- A. none
- B. Less than 1 year.
- C. 1 to 3 years.
- D. 3 to 5 years.
- E. 5 years or more.

Objective: To insure that the individual completing the survey had existing experience working with a multiyear contract. Only positive responses (B through F) were considered valid for the purposes of this research summary. Respondents who reported no MYP experience are summarized in Section E of this chapter.

Response: In total, eighty-eight percent of all valid respondents have had over one year's experience with a government multiyear contract. Thirty-one percent of the respondents had over five years of experience. The modal response was answer C (1 to 3 years) which represented 34% of the population. These facts add face validity to the

respondents answers to the rest of the survey questions.
See Figure 5.3.

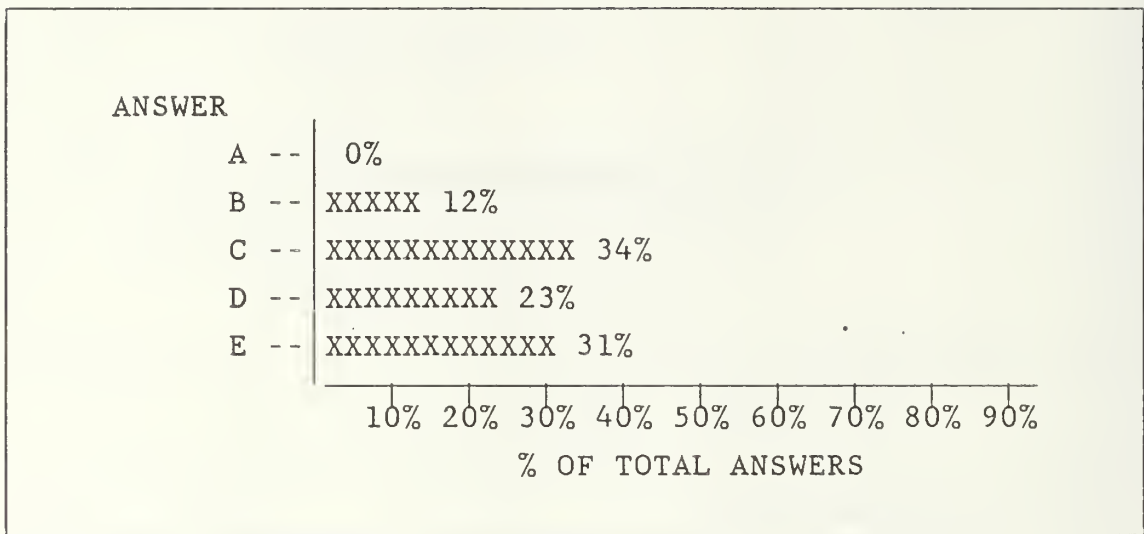


Figure 5.3 Response To Question 3.

4. Subcontract Type

Question: We have a _____ type of contract with the prime contractor to provide materials for the Navy's MYP contract.

- A. Firm Fixed Price
- B. Other Fixed Price
- C. Cost Type Contract
- D. Other (Please specify)

Objective: This question was presented to identify the types of contracts used by the primes for their subcontracts. It was included to provide comparative data to a similar question asked of the prime contractors.

Response: The vast majority (92%) of the respondents reported a firm-fixed-price contractual relationship with the prime contractor. One survey form did not have this question completed which reduced the valid population on this question to 47. This responses by the subcontractors are in agreement with those provided by the prime contractors. See Figure 5.4.

ANSWER

A -- XX 92%
B -- X 3%
C -- XX 5%
D -- 0%

10% 20% 30% 40% 50% 60% 70% 80% 90%
% OF TOTAL ANSWERS

Figure 5.4 Response To Question 4.

5. Identification of MYP Subcontract

Question: How does a prime contractor convey to you, as a subcontractor, when you are bidding for business on a governmental multiyear contract?

- A. This information is not provided.
- B. It's identified in the bid request.
- C. The order quantity indicates when it's a multiple year buy.
- D. The contract calls for multiple deliveries over several years.
- E. Other (please specify) _____

Objective: This question was presented to identify how the prime contractors conveyed to competing vendors when their bid was for a multiyear contract. Inorder to gain the advantage of full competition based on all variables this is an important point to be considered. The fact that this contract will be the only opportunity to compete for this business for the next five years should provide a large incentive to submit the very best bid possible. This question was also included to provide comparative data for a similar question asked of the prime contractors.

Response: The majority of the respondents, eighty-one percent, reported that the request for bids (RFB) identified when a procurement was for a multiyear contract. Only one subcontractor, two percent of the population, reported that the prime did not identify when a proposal was for a MYP project. One respondent reported that he read Aviation Week and knew when a MYP contract was in effect. These responses are in agreement to those presented by the prime contractors. See Figure 5.5.

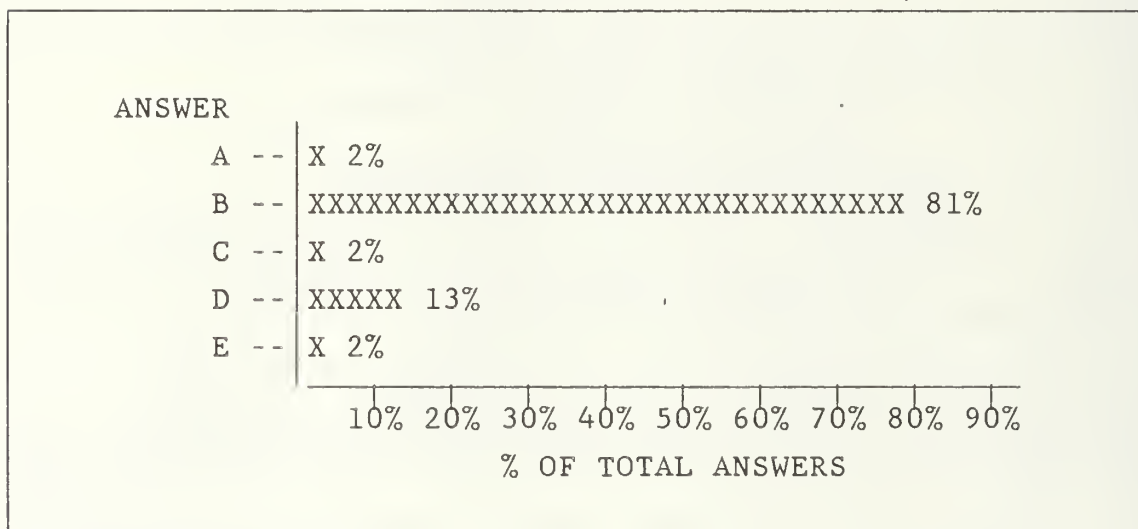


Figure 5.5 Response To Question 5.

6. Defense Related Business

Question: In your position as a subcontractor providing material to another firm, do you have the ability to identify whether the ultimate user of your product is a Department Of Defense (DoD) Agency?

A. Yes

B. No (if no, skip question 7, go to question 8)

Objective: To determine whether the respondent had the capability to identify the ultimate user of its product. This question is essentially the first half of a two part question to determine the respondents indirect business

relationship with the DoD. The concept of the "ultimate user" was presented because of the subcontractual relationship with a prime contractor and not with the U. S. Government.

Response: Ninety two percent of the respondents reported that they had the ability to determine when the DoD was the ultimate user of their product. See Figure 5.6.

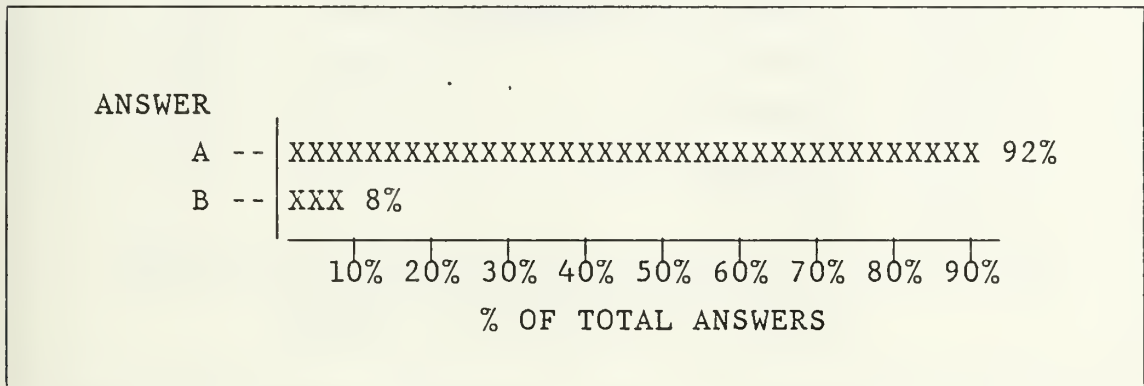


Figure 5.6 Response To Question 6.

7. Defense Subcontractual Business

Question: What percentage of your firm's business is as a subcontractor providing material to another contractor for ultimate DoD use?

_____ %

Objective: To be answered by those firms that responded affirmatively to question 6. It was presented to identify the segment of the firm's indirect business relationship with the DoD.

Response: The population for this question was 44 of the 48 returned surveys. The responses ranged from a low of 1% to a high of 90% of that firm's business. For presentation purposes the responses are arrayed in five groups of equal range. Group one (1% - 20%) is the modal category of the respondents and represents a relatively low business

association with the DoD. However, a total of 61% of the respondents fell within the 21% to 80% range which represents a considerable business relationship with the DoD. See Figure 5.7.

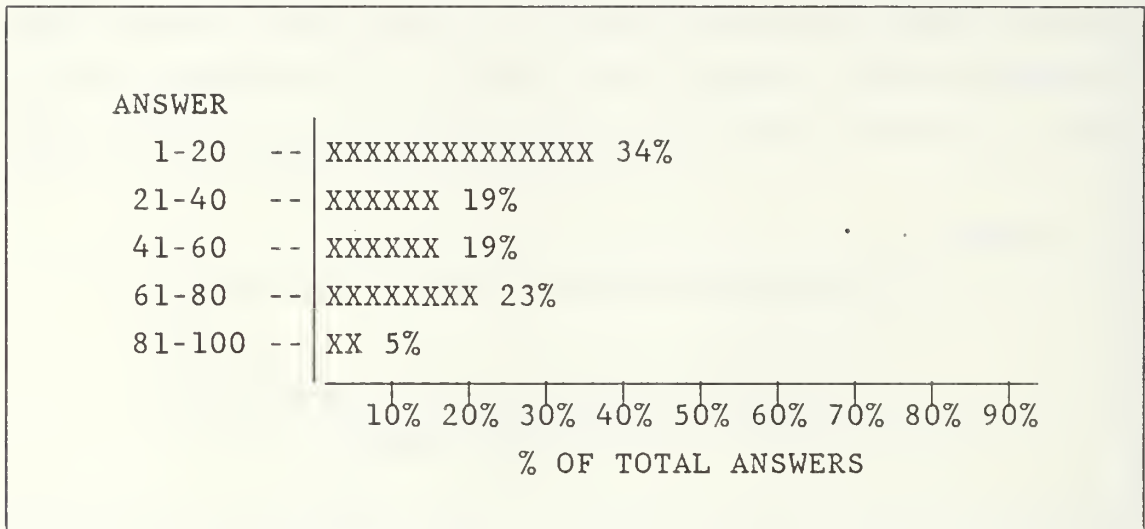


Figure 5.7 Response To Question 7.

8. Defense Prime Contractor Business

Question: Does your firm have any contracts to provide materials or services directly to a DoD agency? If yes, please identify what percent of your business falls in this category.

- A. Yes _____ %
 B. No

Objective: To identify those firms that had direct contractual arrangements with the DoD.

Response: Seventeen firms, thirty-six percent, reported no direct contracts with the DoD. These are reflected in Figure 5.8 as 36% of the population. Thirty one firms, sixty-four percent, reported that they had direct contracts with the DoD. The contracts ranged from a low of .1% to a high of 80% of their business. For presentation purposes the responses are arranged in five groups of equal

range. Group one (1% - 20%) is the modal category with 50% of the firms represented. Few of the subcontractors had any significant direct dealings with the DoD. See Figure 5.8.

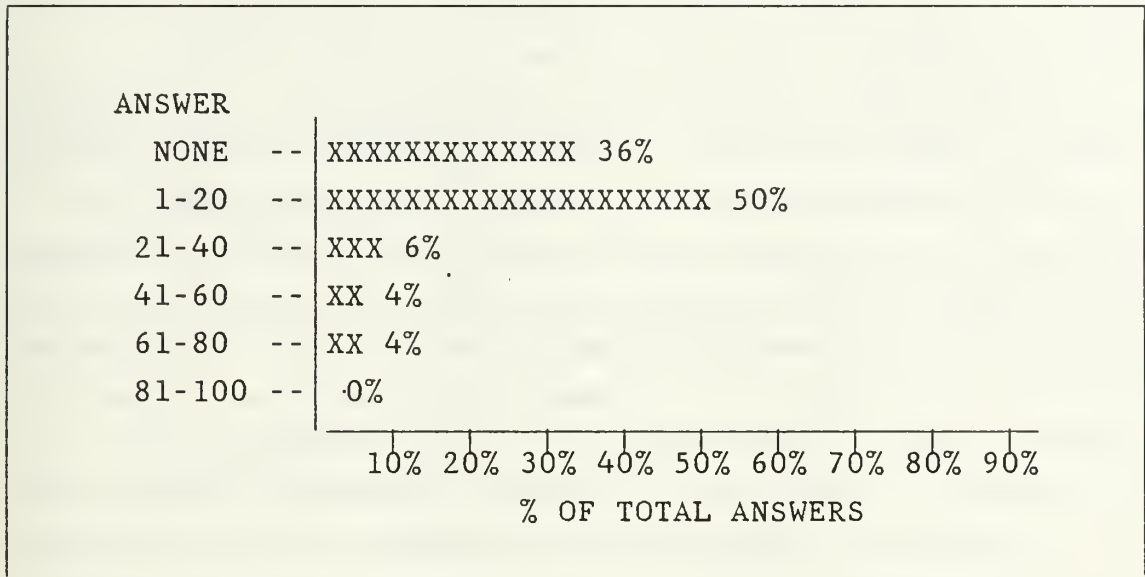


Figure 5.8 Response To Question 8.

Questions 9 through 15 were designed to elicit a subjective response from the individuals completing the questionnaire. The questions were directed at the effects of multiyear procurement on their business and on their competitors. A seven-point Likert scale was chosen for the responses because it offers more reliability than smaller scales and less complexity than larger scales [Ref. 32: p. 595].

9. Effect of Increased Use of MYP

Question: The increased governmental use of multi-year procurement (MYP) contracts would result in my firm competing for more defense related business.

1-----2-----3-----4-----5-----6-----7
 STRONGLY MILDLY MILDLY STRONGLY
 DISAGREE DISAGREE DISAGREE NEUTRAL AGREE AGREE AGREE

Objective: To ascertain the opinions of current MYP subcontractors concerning the concept of the governments increased use of MYP. This question was also included to provide comparative data to a similar question asked of prime contractors concerning their subcontractors.

Response: There were respondents who provided answers in all seven of the Likert rankings offered. Six percent strongly agreed and strongly disagreed with this statement. The modal response was that 38% of the respondents "agree" with the statement that an increased use of governmental MYP contracts would result in their increased level of competing for defense related business. These responses are in agreement with those generated by the prime contractors. A total of 57% of all respondents agreed with the statement in question nine. Compared to only 27% who disagreed, this represents a two to one response rate in favor of increased government use of MYP to stimulate more competition for defense business. See Figure 5.9.

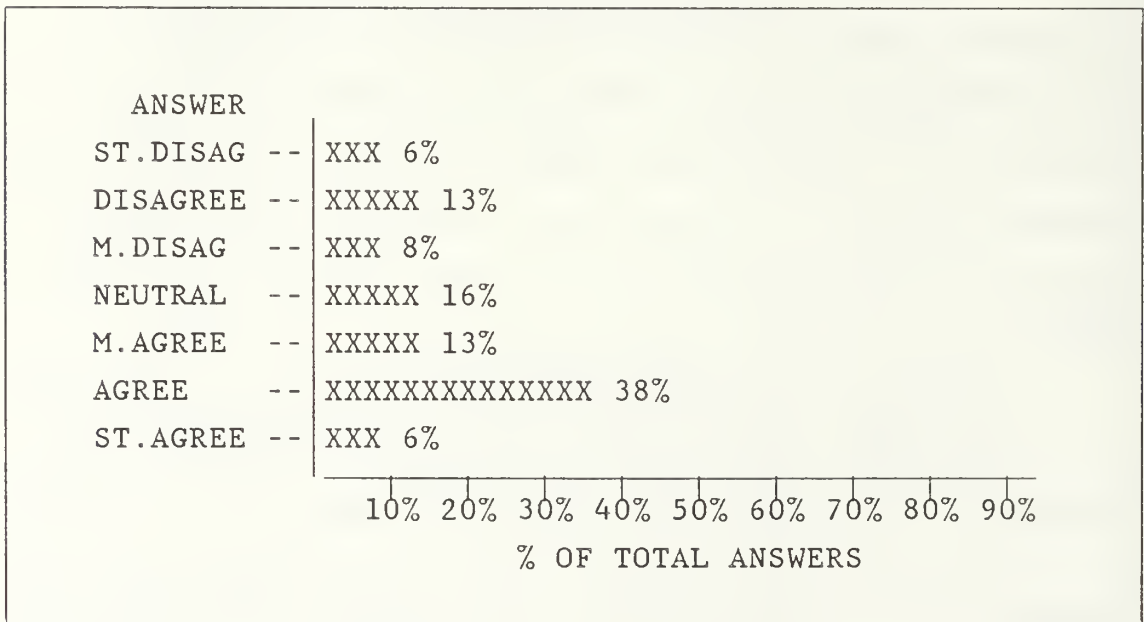


Figure 5.9 Response To Question 9.

10. Competition For a MYP Subcontract

Question: As a subcontractor competing for an award under a MYP contract, I encounter more competition than for annual contracts for the same type of material.

1-----2-----3-----4-----5-----6-----7
STRONGLY MILDLY MILDLY STRONGLY
DISAGREE DISAGREE DISAGREE NEUTRAL AGREE AGREE AGREE

Objective To identify any changes in the level of competition stimulated as a result of the MYP contract. The use of multiyear contracts is supposed to be a stimulant for competition. This increased competition has been thought to exist at the subcontractor level.

Response: The modal category, thirty-one percent, was a neutral response to question ten. The rest of the answers were split almost exactly in half. Thirty-six percent responded with some level of disagreement and thirty-three percent responded with some level of agreement with the statement in question ten. See Figure 5.10.

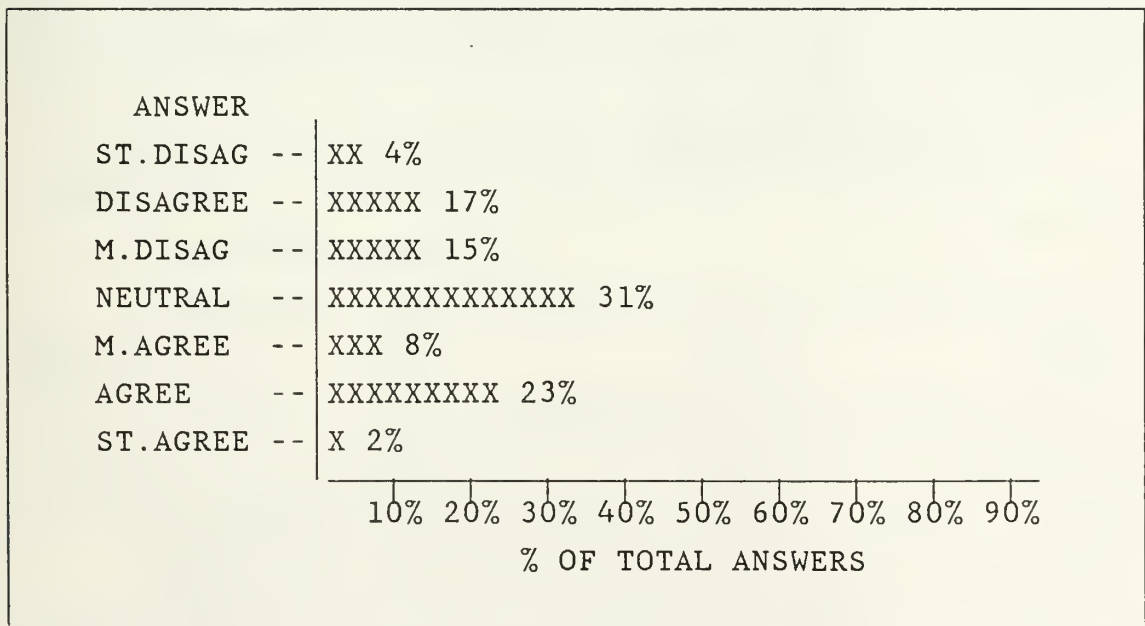


Figure 5.10 Response To Question 10.

The subcontractors were given the following situation to consider in formulating their responses to questions 11 through 15. "My firm's being awarded a MYP subcontract increases our ability to remain ahead of the competition in such areas as:"

11. Retention of Critical Personnel

Question: The retention of critical personnel.

1-----2-----3-----4-----5-----6-----7
STRONGLY MILDLY MILDLY STRONGLY
DISAGREE DISAGREE DISAGREE NEUTRAL AGREE AGREE AGREE

Objective: To elicit the opinions of the survey respondents on the effects of a MYP on subcontractors. Specifically on a firms ability to remain ahead of the competition in retaining critical personnel as a result of an extended contractual MYP relationship.

Response: The modal response to this question was 33% for "agree". Sixty-seven percent of all responses were in agreement, to some extent, with this statement while only 10% of the respondents disagreed with the statement of question eleven. Twenty-three percent of the respondents were neutral. See Figure 5.11.

12. Employee Training

Question: Maintaining a high level of personnel training.

1-----2-----3-----4-----5-----6-----7
STRONGLY MILDLY MILDLY STRONGLY
DISAGREE DISAGREE DISAGREE NEUTRAL AGREE AGREE AGREE

Objective: To elicit the opinions of the survey respondents on the effects of a MYP on subcontractors. Specifically on a firms ability to remain ahead of the competition in maintaining a high level of personnel training as a result of an extended contractual MYP relationship.

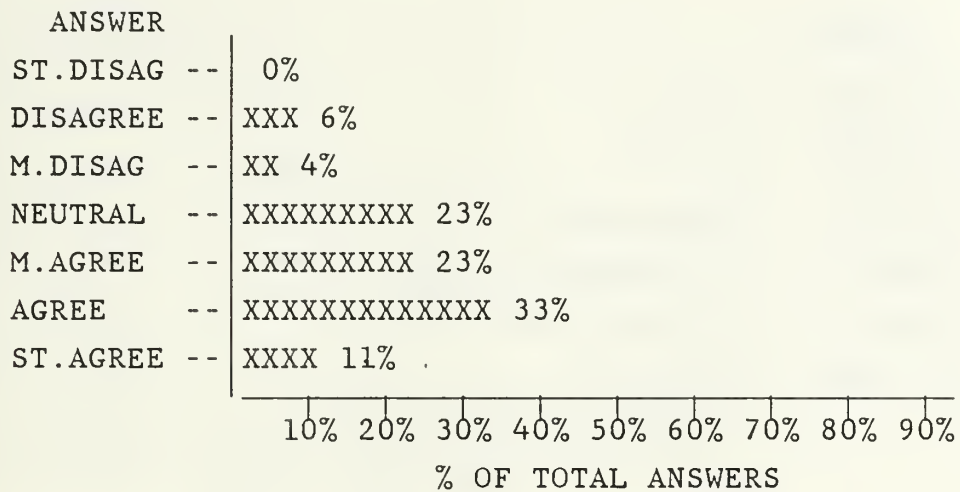


Figure 5.11 Response to Question 11.

Response: There were two rankings which received equal answers of 31% for this statement. They were mildly agree and agree with the statement in question twelve. In total, 73% of all respondents agreed to some degree with the increased personnel training associated with the longer MYP contract. Only 6% of the respondents disagreed with question twelve, while 21% reported neutral responses. See Figure 5.12.

13. Technology Advances

Question: Keeping pace with the industries technological advances.

1-----2-----3-----4-----5-----6-----7
 STRONGLY MILDLY MILDLY STRONGLY
 DISAGREE DISAGREE DISAGREE NEUTRAL AGREE AGREE AGREE

Objective: To elicit the opinions of the survey respondents on the effects of a MYP on subcontractors. Specifically on a firms ability to remain ahead of the competition with industries technological advances as a result of an extended contractual MYP relationship.

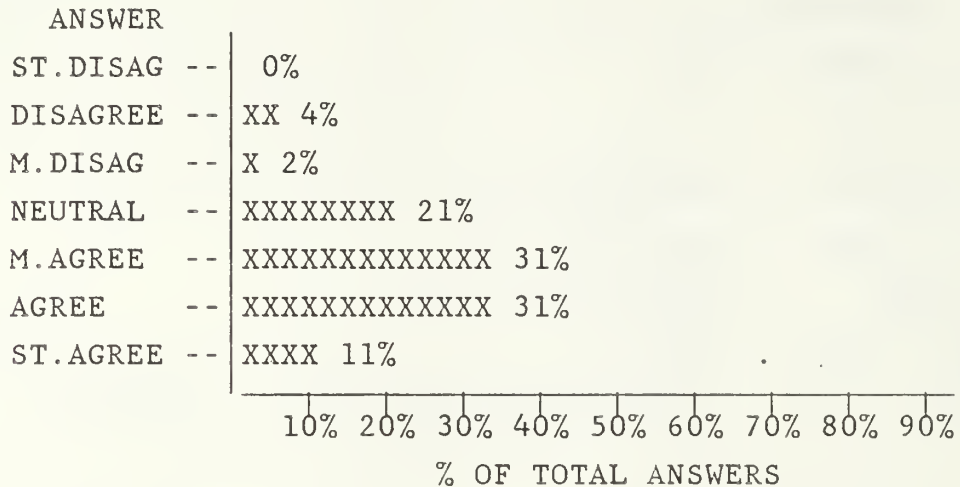


Figure 5.12 Response To Question 12.

Response: The largest single category of responses, thirty-five percent, were neutral to the statement of question thirteen. However, a total of 55% responded agreement of one level or another to their ability to remain ahead of the competitors in technological advances. Only 10% responded with disagreement to question thirteen. See Figure 5.13.

14. Increased Production Capacity

Question: Enabling us to increase our production capacity.

1-----2-----3-----4-----5-----6-----7
 STRONGLY MILDLY MILDLY STRONGLY
 DISAGREE DISAGREE DISAGREE NEUTRAL AGREE AGREE AGREE

Objective: To elicit the opinions of the survey respondents on the effects of a MYP on subcontractors. Specifically on a firms ability to increase their production capacity as a result of an extended contractual MYP relationship.

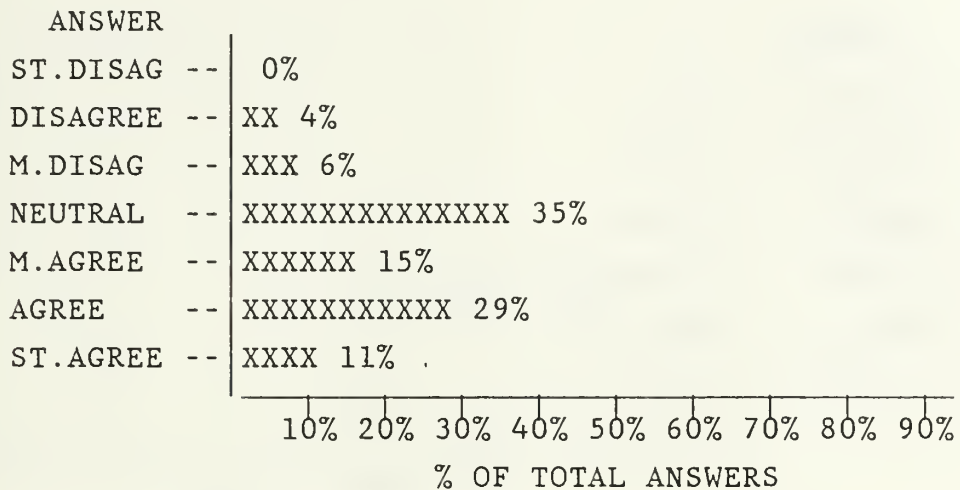


Figure 5.13 Response To Question 13.

Response: The majority of all respondents, seventy-seven percent, expressed agreement, to one degree or another, with this statement. The modal category was "agree" with thirty-five percent of the respondents. Only six percent of the population responded with disagreement to question fourteen. See Figure 5.14.

15. Competitive Advantage Created by MYP

Question: Establishing a competitive advantage for us at contract resolicitation.

1-----2-----3-----4-----5-----6-----7
 STRONGLY MILDLY MILDLY STRONGLY
 DISAGREE DISAGREE DISAGREE NEUTRAL AGREE AGREE AGREE

Objective: To elicit the opinions of the survey respondents on the effects of a MYP on subcontractors. Specifically on the effect of being the incumbent subcontractor for a multiyear program.

Response: The modal response for this question was 38% for "agree". A total of 65% of all respondents agreed

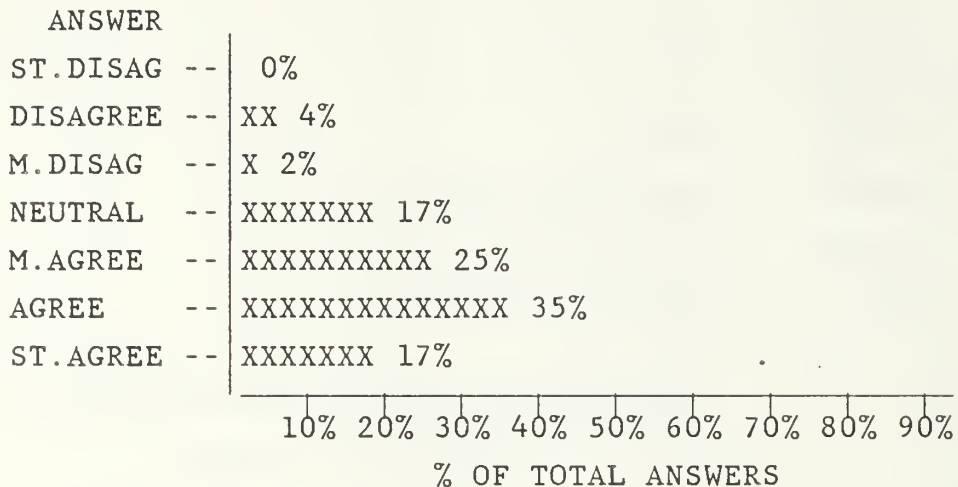


Figure 5.14 Response To Question 14.

with the statement of the MYP establishing a competitive advantage for their firm at contract resolicitation. Only six percent of the respondents disagreed that their current position creating a competitive advantage for them at contract resolicitation. See Figure 5.15.

D. DISCUSSION OF VALID SURVEY RESPONSES

The job descriptions of the individuals completing the survey questionnaire's were all considered valid for the purposes of this research. Each respondent was in a position which required a working knowledge of government contracting. The majority of the respondents, ninety-two percent, had over five years of experience in their current subspecialty. This high experience level adds to the validity of the opinions expressed in the survey.

All of the valid respondents had some level of experience with a governmental multiyear contract with over 88% having had more than a year's experience with MYP. This is a key factor in establishing validity for the subjective responses in questions 9 through 15.

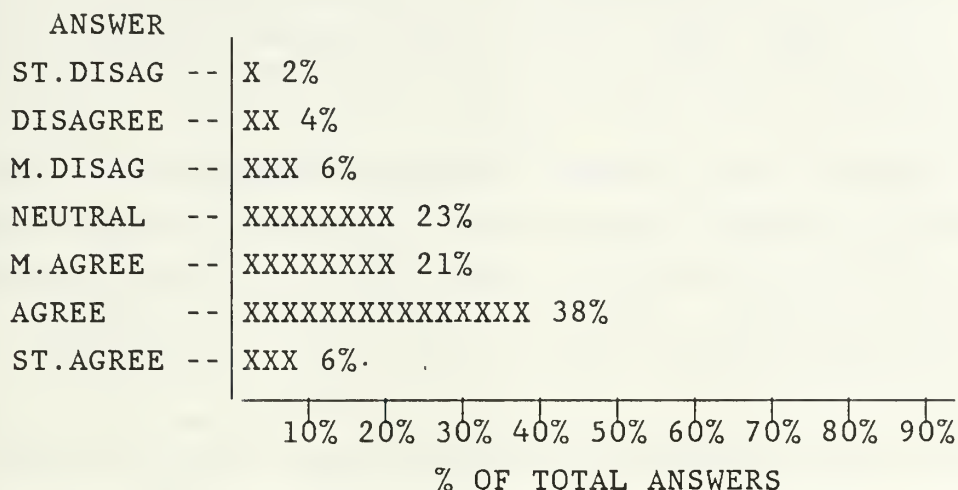


Figure 5.15 Response To Question 15.

The subcontractors reported almost unanimously a firm-fixed-price contractual relationship with the prime contractor. They were also unanimous in their response as to how the primes informed them of a MYP proposal. The identification in the RFP was the most common mode of transmitting this information.

Most of the firms, sixty-one percent, were defense oriented with between 21% and 80% of their business being ultimately directed at the DoD. This establishes an indirect business association with the DoD and provides a perspective from which to view the firm's activities. These firms are fairly heavily defense oriented and as such are aggressive contenders for increased government business. Only 31 firms reported that they had direct defense contracts and most of those, seventy-eight percent, identified that this portion of their business fell below 20% of their output.

Most of the subcontractors, fifty-seven percent, reported that the government's increased use of MYP would result in their competing for more defense related business.

There was no conclusion as to the extent of increased competition under a MYP contract. The firms were split into three almost equal groups. One group disagreed with any noticed increase in competition. Another group was neutral about the question and the third group expressed agreement to an increase in competition experienced under MYP.

As subcontractors under a MYP, they were asked to express opinions as to any perceived advantages of their current position over their competitors. They provided universal agreement as to the multiyear contracts positive effects on: the retention of critical personnel; maintaining a high level of personnel training; keeping pace with the industries technological advanced; and enabling them to increase their production capacity.

A substantial sixty-six percent of the subcontractors reported that the current multiyear subcontract established a competitive advantage for them at contract resolicitation. There were only 12% of the respondents that disagreed with their having a competitive advantage at contract resolicitation.

E. INVALID SURVEY RESPONSES

Three of the returned questionnaires were annotated by the respondents as not being associated with a MYP contract. The survey form requested individuals with no experience with a Government multiyear contract to answer only questions 1,2,3,6,7,8, and 9.

One of these three drafted a letter response instead of answering the survey questions. The letter stated that they had a single contract which covered the procurement of the ARC-190 equipment for a production aircraft.

The three negative responses to the survey represented a 5.9% (3 of 51) portion of the completed questionnaire population. This occurred in spite of the researchers' effort to direct the questionnaires to specific points of contact within the subcontractor firm.

The two respondents that completed the survey each reported over 3 years of experience in their current specialty. They identified a five to ten percent segment of their business as for ultimate DoD use. Neither of these two firms reported a prime contractor relationship with the DoD.

These firms were not included in the population of respondents the researcher considered valid for the purposes of this study. An interesting point is that there were any respondents that weren't aware of their companies' involvement with a government multiyear contract.

VI. PRINCIPAL FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

A. PRINCIPAL FINDINGS

The primary objective of this study was to examine the effects of the Navy's use of multiyear procurement for major weapon systems on the subcontracting activity of prime contractors and on competition among their vendors. This was accomplished employing the services of two survey questionnaires. One questionnaire was directed at the Navy's prime MYP contractors. It was developed to elicit both objective and subjective responses concerning MYP. Several questions were structured to identify any procedural changes in their subcontracting activity between previous annual and the current MYP contract. The small population of prime contractors combined with the circumstances surrounding some of the individual respondents produced a small usable response sample. The findings and conclusions generated by this research are directed at the populations surveyed and are not intended to project similar responses for the entire universe of contractors. A second separate survey questionnaire was sent to seventy-six MYP subcontractors. This questionnaire was directed at obtaining data concerning the MYP competitive environment and on their perceptions of the effects of MYP. These perceptions were aimed at relative advantages created by their current position as a MYP subcontractor.

1. Prime Contractors

a. No New Subcontractors

There was no evidence collected in the survey that identified an increase in new subcontractors generated by MYP. The prime contractors provided data that reflected a minimal increase in new vendors for the multiyear contract.

b. No Unsolicited Bids

There was no reported increase in the number of unsolicited bids for subcontracts under the multiyear contract. An increase in this population would have been one indicator of an increased level of competition.

c. Firm-Fixed-Price Subcontracts

The prime contractors reported an almost exclusive use of firm-fixed-price subcontracts. This contractual arrangement creates a favorable position for the buyer because of the decrease in business risk for his firm. The prime contractor establishes an extended contractual agreement with his vendors to provide material at a fixed price. The subcontractors are burdened with the risk of producing for several years at a predetermined price. No allowances were made to incorporate economic price adjustments in to the contract.

d. RFP Identifies MYP Subcontract

The prevalent method of communicating the establishment of a subcontract as one for a multiyear prime was the RFP. As a result, only those companies that were identified in the prime's procurement records would have the opportunity to compete for this business.

e. E.O.Q. Buys

The prime contractors reported extensive use of one time EOQ buys to satisfy their MYP material requirements. The EOQ purchase was for either a one time delivery or multiple deliveries for the life of the contract. The result is that there are significantly fewer opportunities for subcontractors to compete for this business.

f. Limited Competitively Awarded Subcontracts

The prime contractors reported relatively limited use of the competitive method for awarding subcontracts. The two firms that provided data for this area reported only thirty percent and fourteen percent of their

subcontracts were awarded competitively. The majority of the subcontracted effort was to other divisions within the same corporation. These percentages were consistent with the firms make or buy program. There were no reported significant changes in any of the prime contractor's make or buy program as a result of the MYP.

g. Prime Contractors Recommend Increased Use of MYP

There was general agreement among the prime contractors that an increased use of MYP by the government would result in higher subcontractor activity. This was inconsistent with their responses to earlier questions concerning the effects of the existing multiyear contract on their subcontracting activity. The current MYP has failed to generate a noticable increase in the number of new vendors or unsolicited bids.

h. No Negative Effects of MYP on Subcontractors

The prime contractors voiced near universal agreement to the subjective questions concerning unsuccessful bidders for the MYP. They felt that the extended period before they would recompute the MYP business would have no negative impact on the unsuccessful company's ability to: retain critical personnel; maintain a high level of employee training; keep up with technology advances in the industry; and to maintain it's current production base. This question was presented to put the prime contractors in the position of their subcontractors and to evaluate this extended business loss for the firm. These responses were not in agreement with those generated by the subcontractors for similar questions. The subcontractors felt that their current position as a MYP subcontractor gave them an advantage over their competitors in the above identified areas.

i. No Competitive Advantage

In light of the possible negative effects of an extended business gap, the prime contractors were asked to evaluate the competitive position of the unsuccessful vendors. They all felt that there would be no negative effects of a multiyear contract on the ability of it's vendors to remain competitive for contract resolicitation. Here again these responses were in disagreement with those presented by the subcontractors. The subcontractors felt that their incumbent status would provide a definite advantage for them at contract resolicitation.

2. Subcontractors

a. Subcontractors Recommend Increased Use of MYP

The majority of the subcontractors agreed that the governments increased use of MYP would incentivize them to compete for more DoD business. These responses were in agreement with those of the primes to a similar question. While this same response was given by both surveyed segments, it is not consistent with other data collected in the survey. The existing use of MYP has not resulted in a noticeable increase in competition, therefore, it is difficult to believe that more MYP would generate increased subcontractor activity. It might result in these firms getting more DoD business but not in an overall increase in competition.

b. No Increased Competition

The subcontractors provided mixed responses when queried about any increased level of competition under MYP. One third of the population reported more competition, one third reported no more competition, and one third provided a neutral response or no opinion.

c. MYP Created Advantages

The subcontractors responded that their position as the incumbent MYP subcontractor created advantages for their firm in the following areas:

1. The retention of critical personnel.
2. The ability to maintain a high level of personnel training.
3. The ability to keep pace with the industry's technological advances
4. Enabling them to increase their production capacity.

d. Definite Competitive Advantage

The subcontractors expressed strong agreement that their current position as the incumbent MYP subcontractor would create a competitive advantage for their firm at contract resolicitation. This is a direct result of the advantages identified in finding 3 above. It also incorporates the concept of proving one's value by demonstrating reliable, quality performance over the life of a contract. This proven business relationship can be an overriding consideration which may offset a minor price variance offered by an unproven vendor.

B. CONCLUSIONS

1. Subcontractor Competition

The information collected during this research does not support the concept of an expansion of competition at the subcontractor level.

- a. There was no significant increase in the level of unsolicited bids.
- b. There was minimal increase in the number of new suppliers.
- c. The subcontractors reported no increase in competition when competing for a MYP subcontract.

2. Competitive Advantage

The award of a subcontract under a multiyear arrangement created a competitive advantage for that vendor at contract resolicitation. The subcontractors felt that

- their current position increased their competitive advantage
- in the following areas:
 - a. The retention of critical personnel.
 - b. The ability to maintain a high level of personnel training.
 - c. The ability to keep pace with the industry's technological advances.
 - d. It enabled them to increase their production capacity.

3. Negative Impact

Considering conclusions one and two the use of MYP could have a negative impact on the total subcontractor population. The extended contractual arrangement between the primes and subcontractors creates an extended time void where there is no contractual activity. This may be an acceptable situation if there were an increase in competitors or new vendors for this multiyear business. The surveyed firms indicated that this was not the case for the current multiyear contract. Competitively awarded subcontracts , at fourteen percent and thirty percent of the total subcontracted value, is not a significant segment of the population. Almost forty-eight percent of the cost savings derived from MYP are generated by subcontracted activity. As such, even more emphasis should be exerted to increase the level of competition from new suppliers.

C. RECOMMENDATIONS

The distinct cost advantage to the U. S. Government derived from multiyear procurement is the driving force for its continued utilization. As identified in Table I this cost advantage is mostly obtained from the procurement activities of our prime contractors.

This research effort has revealed that the use of MYP does not increase subcontractor competition. The comments of one subcontractor were that he was able to offer a better contract price because of more economical production runs. The storage costs were insignificant compared to the cost to

setup and produce the item. This is most likely the cause of most of the cost savings from the MYP subcontractors.

This researcher recommends that the U. S. Navy continue to utilize MYP for the acquisition of its major weapon systems. However in this researcher's opinion, the currently derived cost reductions can be enhanced by a concerted government effort. The U. S. Navy has to take a pro-active role in the subcontracting activities of the prime contractors. Some specific recommendations for increasing subcontractor competition are:

1. Directed Second Sourcing

Directed subcontracting for major components of the weapon system. A second sourcing provision could be incorporated into the provisions of the contract. The advantages of employing second sourcing for prime contractors is an established Navy acquisition strategy. The same advantages could be obtained by pushing this practice down to the subcontractor level. A potential drawback to this alternative is that it could offset any advantages derived from the EOQ purchase from one supplier.

2. Incentivize Subcontractor Competition

The use of an incentive provision within the contract to motivate the prime contractor to obtain more competition for it's procurement actions. There would have to be established goals and adequate rewards in order for this to be an effective alternative.

3. Prime Contractor Make or Buy Programs

Closer review and evaluation of a contractor's make or buy program before contract award. Insure that the work being awarded to other divisions within the same corporation is competitively awarded.

4. Special CPSR

Complete a special CPSR prior to the award of the MYP. Special emphasis should be devoted to the level of competitively awarded subcontracts by the prime.

5. Wider Bid Solicitation

Incentivize the primes to solicit bids from a wider segment of the market. Using the RFP to advertize a MYP subcontract is only effective for those firms receiving an RFP. The vast segment of the market that doesn't receive a RFP will never have the opportunity to compete for that business.

APPENDIX A
PRIME CONTRACTOR

MULTIYEAR PROCUREMENT QUESTIONNAIRE

The following questions were designed to solicit information on multiyear procurement (MYP). If you work within a separable reporting division of a corporation, please use your division's data.

Questions 1 through 10 should be answered by circling the letter identifying the most accurate/appropriate response or by providing the percent requested.

1. Which answer best describes your area of responsibility in the firm?

- A. Contracts / Purchasing
- B. Subcontracting
- C. Materials Movement
- D. Marketing
- E. Business Financial Manager
- F. Other (please specify) _____

2. How many years of experience do you have in the specialty indicated in question #1?

- A. Less than 1 year.
- B. 1 to 3 years.
- C. 4 to 6 years.
- D. 7 to 9 years.
- E. 10 years or more.

3. How many years have you been working with a Government multiyear contract? Either as a prime or subcontractor.

- A. none
- B. Less than 1 year.
- C. 1 to 3 years.
- D. 4 to 5 years.
- E. 5 years or more.

4. What percentage of your firm's business is with the Department of Defense (DOD) either as a direct supplier or indirectly through another contractor?

_____ %

5. What percentage of your firm's DOD business is as a contractor supplying material under a MYP contract?

_____ %

6. We have experienced a _____ percent increase in the number of unsolicited bids for business generated under the Navy MYP contract as compared to annual contracts for the same materials.

_____ %

7. The number of new suppliers generated as a result of the MYP contract has been:

_____ %

8. What percent of the dollar value of the Navy's MYP contract was subcontracted out by your firm?

_____ %

9. What percent of the subcontracts awarded to procure material for the Navy's MYP contract were of a multiyear design?

_____ %

10. What percent of the subcontracts awarded to procure material for the Navy's MYP contract were one time buys of material for either large EOQ orders or small quantities?

_____ %

Questions 11 through 17 require objective responses.

11. Please provide the percentages for the processes your firm utilized in selecting its subcontractors to provide material under the Navy's MYP contract.

<u>CATEGORY</u>	<u>PERCENT</u>
A. Competitive	_____
B. Follow-on (*)	_____
C. Sole Source	_____
D. Other (Please specify)	_____
	100%

* Follow-on: Where an established business relationship existed for the material and no new source of supply was considered.

12. Please provide the percentages for the processes your firm utilized in selecting its subcontractors under previous Navy annual contracts for material now under MYP contract.

<u>CATEGORY</u>	<u>PERCENT</u>
A. Competitive	_____
B. Follow-on (*)	_____
C. Sole Source	_____
D. Other (Please specify)	_____
	100%

* Follow-on: Where an established business relationship existed for the material and no new source of supply was considered.

13. Please provide the percentages for the following types of subcontracts utilized by your firm to procure materials for the existing Navy MYP contract.

<u>TYPE</u>	<u>PERCENT</u>
A. Firm Fixed Price	_____
B. Other Fixed Price	_____
C. Cost Type	_____
D. Other (Please specify)	_____
	100%

14. Please provide the percentages for the following types of subcontracts your firm utilized to procure materials for previous Navy annual contracts, for the same major weapon system now under MYP contract.

<u>TYPE</u>	<u>PERCENT</u>
A. Firm Fixed Price	_____
B. Other Fixed Price	_____
C. Cost Type	_____
D. Other (Please specify)	_____
	100%

15. It is difficult to generate competition for some of our products for the Navy's MYP contract. ____ (A) ____% of our procurement actions, which represents ____ (B) ____% of the contract value, falls into this category.

A. ____% (procurement actions)
 B. ____% (contract value)

16. Our experience has shown that it is easy to generate competition for ____ (A) ____% of our procurement actions, which represents ____ (B) ____% of the contract value for the Navy's MYP contract.

A. ____% (procurement actions)
 B. ____% (contract value)

17. Please provide comparative information for your firm's "make or buy" program under previous Navy annual contracts and the existing Navy MYP contract.

	ANNUAL		MYP
	# ITEMS / \$ VALUE		# ITEMS / \$ VALUE
Make	_____		_____
Buy	_____		_____

Questions 18 through 23 are designed to solicit your opinions as to the effects of MYP on your subcontractor base. For these please circle one of the numbers from 1 through 7.

18. The increased governmental use of MYP contracts would result in more vendors competing for my firms subcontracted business.

1-----2-----3-----4-----5-----6-----7
STRONGLY MILDLY NEUTRAL MILDLY STRONGLY
DISAGREE DISAGREE DISAGREE AGREE AGREE AGREE

Use the following statement as the basis for answering questions 19 through 23. Please select the best response for each question.

" The unsuccessful bidding for a MYP subcontract by one of my vendors could result in up to 5 years before another opportunity to compete for that material would occur. This would adversely affect it's ability to:"

19. Retain critical personnel.

1-----	2-----	3-----	4-----	5-----	6-----	7-----
STRONGLY		MILDLY	NEUTRAL	MILDLY		STRONGLY
DISAGREE	DISAGREE	DISAGREE		AGREE	AGREE	AGREE

20. Maintain a high level of employee training.

1-----	2-----	3-----	4-----	5-----	6-----	7-----
STRONGLY		MILDLY	NEUTRAL	MILDLY		STRONGLY
DISAGREE	DISAGREE	DISAGREE		AGREE	AGREE	AGREE

21. Keep up with technology advances in the industry.

1-----	2-----	3-----	4-----	5-----	6-----	7-----
STRONGLY		MILDLY	NEUTRAL	MILDLY		STRONGLY
DISAGREE	DISAGREE	DISAGREE		AGREE	AGREE	AGREE

22. Maintain it's current production capability.

1-----	2-----	3-----	4-----	5-----	6-----	7-----
STRONGLY		MILDLY	NEUTRAL	MILDLY		STRONGLY
DISAGREE	DISAGREE	DISAGREE		AGREE	AGREE	AGREE

23. Remain a viable competitor for the contract resolicitation.

1-----	2-----	3-----	4-----	5-----	6-----	7-----
STRONGLY		MILDLY	NEUTRAL	MILDLY		STRONGLY
DISAGREE	DISAGREE	DISAGREE		AGREE	AGREE	AGREE

24. Do you convey information to your vendors that a particular contract is to satisfy requirements for a governmental MYP contract? If yes, how?

APPENDIX B
CONTRACTOR MAILING LIST

ADAPTO Incorporated
Box 280
Litchfield Park, AZ 85340

Advanced M.
9900 Bren Road East #601
Minnetonka, MN 55343

Airborn Company
4321 Airborn Drive
Addison, TX 75001

AMP Incorporated
P.O. Box 3608
Harrisburg, PA 17105

Analog Dev
c/o Torkelson Assoc.
4949 Viking Drive
Minneapolis, MN 55435

Arrowhead Products Inc.
411 Katella Avenue
Los Alamitos, California 90720

AVX Ceramics
P.O. Box 867
Myrtle Beach, SC 29577

Bendix Aircraft
Brake & Strut Division
3520 Westmoor Street

Bendix Corporation
Air Transport Division
2150 Northwest 62nd St.
Ft. Lauderdale, FL 33310

Bolens Corporation
215 South Park Street
Port Washington, Wis 53074

Boring Machine Company
7922 Ranchers Road
Fridley, Minnesota 55432

Bournes Incorporated
6135 Magnolia Avenue
Riverside, California 92506

Cleveland Pneumatic
3781 E. 77th Street
Cleveland, Ohio 44105

Collins
Defense Communication Div
350 Collins Road, N.E.
Cedar Rapids, Iowa 52498

Collins
General Aviation Division
400 Collins Road, N.E.
Cedar Rapids, Iowa 52498

Continental
34-63 56th Street
Woodside, New York 11377

Corning
3900 Electronics Drive
Raleigh, NC 27604

CPC Engineering
Rt 20 Box 36
Sturbridge, Mass 01526

DB Products
253 N. Vinedo Avenue
Pasadena, Ca 91107

Delevan
270 Quaker Road
E. Aurora, New York 14052

DEVON PREC
Munson & Wolcott Road
Wolcott, CT 06716

East/West Industries
180 Vanderbilt Motor Pkwy
Hauppauge, New York 11788

Edcliff Incorporated
1711 Mountain Avenue
Monrovia, Ca 91016

Electronic Concepts
526 Industrial Way West
Eatontown, New Jersey 07724

FABRI-TEC
9210 Science Center Dr
Minneapolis, MN 55428

F & B Manufacturing
4248 Chicage Ave. W.
Chicage, IL 60651

FMC Corporation
Northern Ordnance Div
Naval Gun Systems
4800 East River Road
Minneapolis, Minn 55421

Garrett Corporation
Turbine Engine Division
111 South 34th Street
P.O. Box 5217
Phoenix, Arizona 85010

Garrett Corporation
AiResearch Mfg Division
2525 West 190th Street
Torrance, Ca 90509

GENICOM Company
1 GE Drive
Waynesboro, Virginia 22980

Globe Tool
730 24 Avenue S.E.
Minneapolis, MN 55414

Grumman Aerospace Corporation
Bethpage, New York 11714

Gulton S-C
Whittier Avenue
Costa Mesa, Ca 92627

HERCULES
Port Ewen, New York 14266

Harris Semi
c/o Cahil Assoc.
315 Pierce Street
St. Paul, MN 55140

Honeywell Incorporated
Underseas Systems Division
600 2nd Street N.E.
Hopkins, Minnesota 55343

ITT Thermo
1202 5th Street N.E.
Hopkins, MN 55343

Kelsey Hayes Company
Speco Division
P.O. Box 1288
Springfield, Ohio 45501

Kurt Manufacturing
5280 Main Street N.E.
Minneapolis, Minn 55421

Lake Engineering
Long Lake, MN 55356

Ledex Incorporated
P.O. Box 427
Vandalia, Ohio 45377

Lewis & Saunder
O'Shea Ind. Park
Lexington Drive
Laconia, NH 03246

Lords Corporation
1635 West 12th Street
Erie, Pennsylvania 16512

M. S. BELLOW
5322 McFadden Avenue
Hunt. Beach, Ca. 92649

Mallory
3029 E. Washington Street
Indinapolis, IN 46206

Mold Precision
21604 Marilla Avenue
Shatsworth, CT

Motorola Company
5005 East McDowell Road
Phoenix, Arizona 85008

Motorola Semi
9600 W. 76th Street, Suite G
Eden Prairie, MN 55344

National Semi
c/o S. Clothier Co.
7423 Washington Avenue
Minneapolis, MN 55435

National Waterlift
2220 Palmer Avenue
Kalamazoo, MI 49001

Nickelson
21279 Olinda Trail N.
Scandia, MN 55073

Ozone Industries, Inc.
101-32 101st Street
Ozone Park, New York 11416

Poly Science
1213 N. Main Street
Blacksburg, Va 24060

Precision
P.O. Box 20730
Bloomington, MN 55420

Printed CI
1200 W. 96 Street
Minnapolis, MN 55431

Raytheon
c/o Aldridge Assoc.
7138 Shady Oak Road
Eden Prairie, MN 55344

RAYTHEON
350 Elis Street
Mountain View, CA 09351

Raytheon
Equipment Division
430 Boston Post Road
Wayland, Massachusetts 01778

RCA
c/o COMTEK
8053 Blmtg Frwy
Minneapolis, MN 55420

Reliance Electric Company
3800 Annapolis Lane
Minneapolis Minnesota 55441

Remmele Engineering Inc.
1211 Pierce Butler Rt
St. Paul, Minnesota 55104

Rockwell Incorporated
460 Collins Road N.E.
Cedar Radpis, MI 52498

Rogness Equipment Company
1941 West County Rd C2
Roseville Minnesota 55113

Teledyne Industries, Inc.
Ryan Electronics
8650 Balboa Avenue
San Diego, California 92123

Sargent Industries
2533 E. 56th Street
Huntington Park, Ca 90255

Sellars
4520 Doran Street
Los Angeles, CA 90039

Sikorsky Aircraft Division
North Main Street
Stratford, Conn 06602

Simmonds Precision Prod Inc
Panton Road
Vergennes, Vermont 05491

Solid State
c/o HMR Incorporated
Lyndale Avenue
Minneapolis, MN 55420

Sperry
Aerospace & Marine Division
9201 San Mateo Blvd, N.E.
Albuquerque, NM 87119

Tech. Oro.
Cty Rd 92 & Nike Rd.
P.O. Box 470
St. Bonifa, MN 55375

Teledyne Hydra-Power
10-12 Pine Court
New Rochelle, New York 10801

Teradyne
44 Simon Street
Nashua, NH 03060

Tool Products
5100 Boone Avenue N.
Minneapolis, MN 55428

TRW Aircraft Components
23555 Euclid Avenue
Cleveland, Ohio 44117

Union Carbide
P.O. Box 5928
Greenville, SC 29606

Wadell Equipment Co. Inc.
3920 Park Avenue
Edison, New Jersey 08820

Wiggins
5000 Triggs Street
Los Angeles, Ca 90022

Winchester
400 Park Road
Watertown, Ct 06795

APPENDIX C
SUBCONTRACTOR

MULTIYEAR PROCUREMENT QUESTIONNAIRE

The following questions were designed to solicit information on on multiyear procurement (MYP). If you work within a separable reporting division of a corporation, please use your division's data.

Questions 1 through 8 should be answered by circling the letter identifying the most accurate/appropriate response or by providing the percent requested.

1. Which answer best describes your area of responsibility in the firm?

- A. Contracts / Purchasing
- B. Subcontracting
- C. Materials Movement
- D. Marketing
- E. Finance
- F. Other (please specify) _____

2. How many years of experience do you have in the specialty indicated in question #1?

- A. Less than 1 year.
- B. 1 to 3 years.
- C. 3 to 5 years.
- D. 5 years or more.

3. How many years have you been working with a Government multiyear contract? Either as a prime or subcontractor.

- A. none
- B. Less than 1 year.
- C. 1 to 3 years.
- D. 3 to 5 years.
- E. 5 years or more.

NOTE: a. If you selected answer "A" for question #3 only answer questions 6, 7, 8, and 9.
b. If you selected answer "B, C, D, or E" for question #3 please continue.

4. We have a _____ type of contract with the prime contractor to provide materials for the Navy's MYP contract.

- A. Firm Fixed Price
- B. Other Fixed Price
- C. Cost Type Contract
- D. Other (Please specify)

5. How does a prime contractor convey to you, as a subcontractor, when you are bidding for business on a governmental multiyear contract?

- A. This information is not provided.
- B. It's identified in the bid request.

- C. The order quantity indicates when it's a multiple year buy.
D. The contract calls for multiple deliveries over several years.
E. Other (please specify) _____

6. In your position as a subcontractor providing material to another firm, do you have the ability to identify whether the ultimate user of your product is a Department Of Defense (DOD) Agency?

A. Yes

B. No (if no, skip question 7, go to question 8)

7. What percentage of your firm's business is as a subcontractor providing material to another contractor for ultimate DOD use?

_____ %

8. Does your firm have any contracts to provide materials or services directly to a DOD agency? If yes, please identify what percent of your business falls in this category.

A. Yes _____ %

B. No

Questions 9 through 15 are directed at obtaining your opinions concerning a statement related to MYP. For these please circle one of the numbers from 1 through 7.

9. The increased governmental use of multiyear procurement (MYP) contracts would result in my firm competing for more defense related business.

1 2 3 4 5 6 7
STRONGLY MILDLY MILDLY STRONGLY
DISAGREE DISAGREE DISAGREE NEUTRAL AGREE AGREE AGREE

10. As a subcontractor competing for an award under a MYP contract, I encounter more competition than for annual contracts for the same type of material.

1 2 3 4 5 6 7
STRONGLY MILDLY MILDLY STRONGLY
DISAGREE DISAGREE DISAGREE NEUTRAL AGREE AGREE AGREE

Use the following statement as the basis for answering questions 11 through 15. Please Select the best response for each question.

"My firm's being awarded a MYP subcontract increases our ability to remain ahead of the competition in such areas as:

11. The retention of critical personnel.

1 2 3 4 5 6 7
STRONGLY MILDLY MILDLY STRONGLY
DISAGREE DISAGREE DISAGREE NEUTRAL AGREE AGREE AGREE

12. Maintaining a high level of personnel training.

1	2	3	4	5	6	7
STRONGLY		MILDLY		MILDLY		STRONGLY
DISAGREE	DISAGREE	DISAGREE	NEUTRAL	AGREE	AGREE	AGREE

13. Keeping pace with the industries technological advances.

1	2	3	4	5	6	7
STRONGLY		MILDLY		MILDLY		STRONGLY
DISAGREE	DISAGREE	DISAGREE	NEUTRAL	AGREE	AGREE	AGREE

14. Enabling us to increase our production capacity.

1	2	3	4	5	6	7
STRONGLY		MILDLY		MILDLY		STRONGLY
DISAGREE	DISAGREE	DISAGREE	NEUTRAL	AGREE	AGREE	AGREE

15. Establishing a competitive advantage for us at contract resolicitation.

1	2	3	4	5	6	7
STRONGLY		MILDLY		MILDLY		STRONGLY
DISAGREE	DISAGREE	DISAGREE	NEUTRAL	AGREE	AGREE	AGREE

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